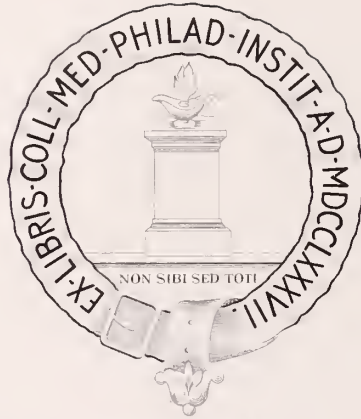


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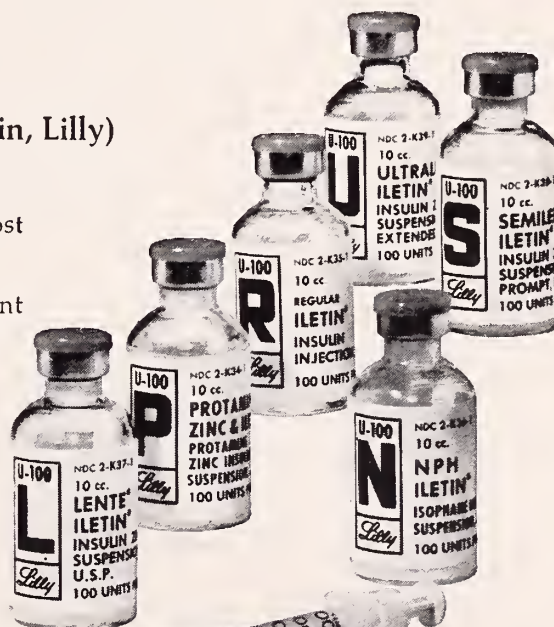
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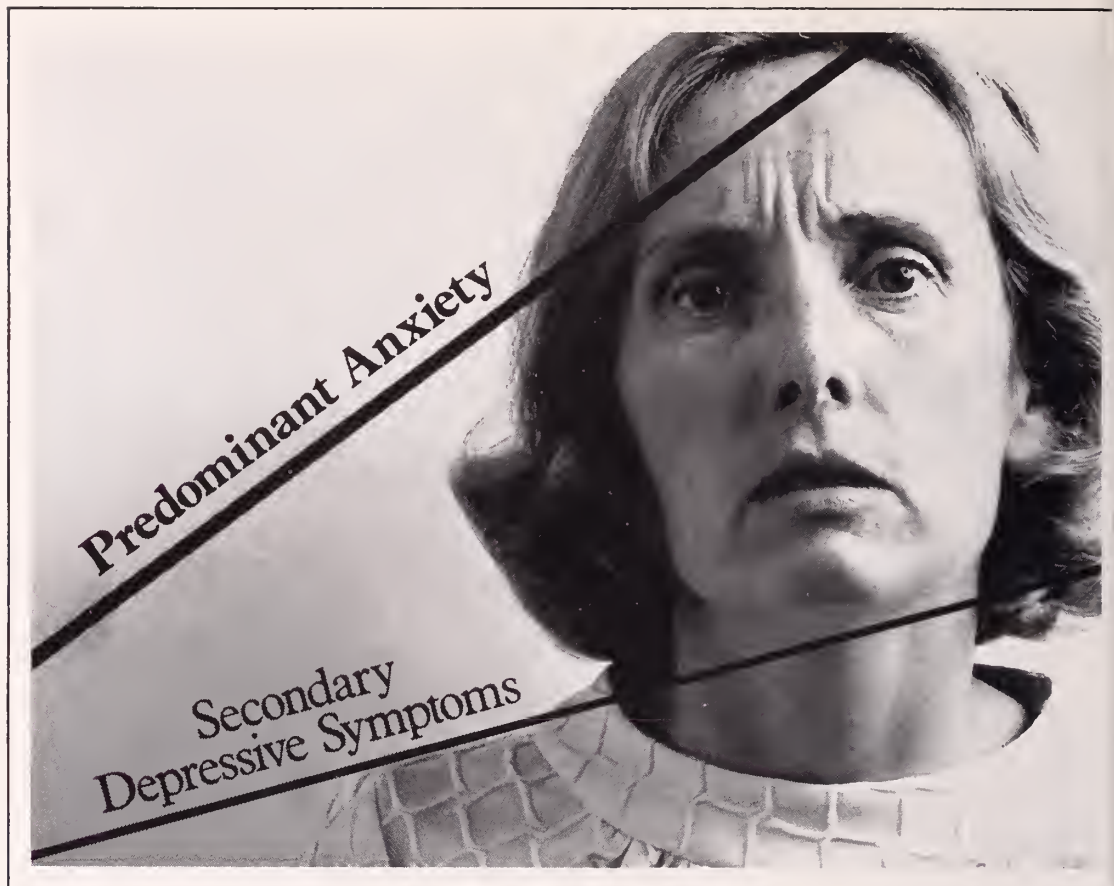
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Number 1

Some Consequences of Electric Shock*

BRIAN C. HODGKIN, Ph.D.**

Electricity has become such a familiar servant and precautionary measures so prevalent that electric shock is relatively rare. When it does occur, however, the consequences are many and depend on the source of electricity, the points and area of contact, and the duration of the shock. This paper presents an overview of shock determinants and consequences, including some recent experimental results. Discussion is limited primarily to deleterious effects of accidental electrical contacts.

Electrical Source Determinants

The source of electricity generates a difference in potential, or voltage, which results in a flow of current, measured in amperes. The current passing through a person depends on the source voltage, the resistance to current flow between him and the source, and his own resistance. Insulating materials present a high resistance to current flow and, therefore, provide protection from electric shock. Source voltage is either of fixed polarity or of alternating polarity resulting in unidirectional current or current alternating in direction at the same frequency that polarity alternates. In general, smaller magnitudes of current are required to cause deleterious effects if the frequency is between 25 and 100 hertz (cycles per second) than if it is outside this range. It is worth observing that commercial power frequency is 60 hertz.

Shock Situation Determinants

The points and area of contact affect the consequences of electric shock. In general, a larger contact area means a lower contact resistance and a

greater current. If contacts are on the same limb, current flows only through that limb; and vital organs, such as the heart and the brain, are not directly affected by the current. If contacts are from limb to limb, the limbs provide resistance to current flow. In addition, current is distributed throughout the volume between contact points so that its magnitude at any internal point is less than that at the points of entry and exit for reasonably small contact areas. Since the heating effect of current is a function of its density, for a given total current, heating is greater if contact area is small. Thus, the cautery heats considerably while the underlying ground plate heats very little, though the current passing between them is the same.

The duration of the shock affects the consequences of the shock. Heating is greater for longer shocks. In addition, the strength-duration properties of excitable tissues require that a current of a given magnitude persist for a certain duration to elicit a response, shorter durations being required for greater currents.

General Effects of Electric Shock

Figure 1 shows the approximate current ranges which have the indicated effects. Magnitudes given are for shocks of one second duration from limb to limb with the current alternating at 60 hertz. In general, if an effect occurs at a low current, it also occurs at a higher current. An exception to this is cardiac fibrillation, which occurs over a range of currents but not outside that range. Each of these effects will be discussed individually.

Most people are able to perceive an electric current of about one thousandth of an ampere, or one milliampere, for a contact area of about one centimeter. As with all effects of electric shock, perception level varies from person to person as well as for the same person at different times. Perception level currents are not harmful when contact is at the body

*Experimental work described in this paper was performed at Johns Hopkins Hospital and supported by PHS Training Grant 5-T1-GM-576, NIH M38.6154.08 and M38.6169.08, and Edison Electric Institute P46.2014.29.

**Research Department, Maine Medical Center, Portland, Maine 04102.

<i>Current in Milliamperes</i>	<i>Effect</i>
10,000	Respiratory Failure, Convulsion Burns
5,000	Cardiac Fibrillation
60	
30	Respiratory Muscles Tetanicallly Contracted
15	Inability To Let Go, Tetanic Muscle Contractions
5	Pain
1	Perception

Figure 1. Effects of 60 hertz shocks of one second or more duration, current path being limb to limb.

surface. A prickling sensation, not uncomfortable or objectionable is felt.

Just above the sensation level, at about five milliamperes, perception becomes pain. A startle reaction is common, with involuntary withdrawal from the source of the shock. Again, when received externally, such shocks are not harmful. More serious consequences are likely as a result of the involuntary withdrawal; for example, a bumped head or a cut hand.

If the current is on the order of fifteen milliamperes, or more, current density within an arm, for example, is great enough so that nerves supplying the muscles, or the muscles themselves, are sufficiently stimulated to cause tetanic muscular contractions. If flexor muscles prevail and contact is with the palm of the hand, it is impossible to let go of the shock source. Such an experience is discomforting, to say the least, as well as very painful.

At twice the "let go" current levels, current density in the thorax becomes great enough to similarly affect the respiratory muscles, the result being suffocation and death if removal from the source is not possible.

Beginning at about sixty milliamperes total current from limb to limb, current density in the heart is great enough to cause the heart to fibrillate. The heart is similarly stimulated by currents of up to about five amperes, at which magnitude current is sufficient to hold all cardiac fibers in contraction thus ending random fiber depolarization. When current ceases, the heart's pacemaker can initiate normal depolarization. Defibrillators deliver ten to twenty amperes for a fraction of a second. At five or more amperes, burns at the contacts are likely unless contact area is large.

The heart fibrillates at extremely small current levels if contact is with the heart directly. Currents of one-tenth of a milliampere possibly can cause the heart to fibrillate. This sensitivity to current is extremely important if a person is catheterized or has a pacemaker with external connections. Precautions

must be taken to prevent current from entering the heart which could occur even by another person touching an exposed pacemaker connection and an electrical device at the same time.

Current levels given above are for one second shocks which is usually long enough to encompass a complete cardiac cycle. If the duration is shorter, and if the timing is such that the T wave of repolarization is not simultaneous with the shock, the fibrillation threshold is higher. The time of the T wave is a particularly vulnerable period, the fibrillation threshold being several times as high if the vulnerable period is avoided. Thus, it is possible for an individual to touch the same shock source twice, be unharmed the first time, but killed the second time simply because the second shock occurred during the repolarization of his heart. Effects of electricity on the heart have been established by several investigators.^{1,2,3,4}

A second special case is when the shock contact points involve the head. In this case, currents of about 100 milliamperes cause a convulsion. Electroshock treatments are basically nothing more than the passing through the head of current of sufficient magnitude to cause a convulsion.

Recent Experimental Findings

A convulsion, or at least its physical manifestations, can also be generated by a limb to limb shock of about ten amperes or more.⁵ It was observed that victims of high voltage electric shock (7200 volts and up) were more frequently resuscitated by artificial ventilation alone than were those receiving shocks from lower voltage sources. It was assumed that the reason for greater survival was that fibrillation had not occurred, but breathing was suspended. Examination of accident reports revealed that indeed it was often known that a blood pressure pulse was present even though breathing was not. An experimental investigation was undertaken which revealed that breathing failure is likely to be a consequence of a convulsion-like phenomenon.

Using anesthetized, insensible rats, cats, and dogs, shocks one second or less in duration were delivered forelimb to forelimb or forelimb to opposite hindlimb. In all species, the reaction was similar, although the current threshold was greater the larger the animal. This reaction consisted of a strong contraction of most, if not all, muscles during the shock, with a predominance of extensor muscles. Immediately following the shock, momentary relaxation during which a breath might be taken, was followed by opisthotonos with cessation of breathing and general tremors.

This condition continued for from five to forty-five seconds, the duration being a function of the type of anesthesia used as well as being variable for a given type of anesthesia. Adequacy of post-convulsion breathing was also a function of anesthesia.

Having observed a convulsion-like reaction to

high voltage, high current experimental electric shock, a request was transmitted to the electric power industry to include observations in accident reports relating to the appearance and behavior of the shock victim. Within the next year, two high voltage accidents were reported in which the victims were described as having an expanded chest, clenched teeth, and as jerking and jumping from muscle spasms, and not breathing. It seems likely that a convulsion type phenomenon occurs at least sometimes in unanesthetized man as a consequence of high voltage, high current shock not involving the head as a contact point.

Further experiments demonstrated that a threshold level of current does not reach the brain for shocks delivered forelimb to forelimb or forelimb to opposite hindlimb. From potential measurements over the surface of the brain and an average resistivity of 500 ohm-centimeters for brain tissue, it was estimated that only 0.13 percent of total forelimb to forelimb current and only 0.03 percent of total forelimb to opposite hindlimb current passes through the brain. For a total current of 10 amperes, this means that about 13 and 3 milliamperes, respectively, reach the brain, considerably less than the 30 to 60 milliamperes required to cause a convulsion when delivered directly to the brain of similarly anesthetized animals.

It was also observed that the current threshold of the observed convulsion was 30 percent or more lower for forelimb to opposite hindlimb shocks than for forelimb to forelimb shocks. Thus, not only are current magnitudes for either contact configuration too small, but the configuration which requires less total current to cause the phenomenon results in less current passing through the brain.

Electroencephalographic measurements were made using electrodes on the surface of the head and with one electrode in the thalamus, in the pons, in the cerebellum, or in a pyramidal tract. It was necessary to curarize as well as anesthetize the animals to prevent motion artifact from obscuring the records. No evidence of a central nervous system seizure was observed for limb to limb shocks. Classic high amplitude rapid seizure activity was observed following a shock to the head. The electroencephalographic evidence seems to rule out the possibility that the convulsion is produced by massive nervous stimulation of the brain consequent to electrical stimulation of more peripheral nervous structures including the spinal cord.

The convulsion is possibly of spinal origin, or a

spinal-neuromuscular phenomenon. This view is supported by the lower threshold for forelimb to hindlimb shocks which presumably involve the spinal cord to a greater degree. If one discounts the electroencephalographic evidence on grounds of curarization, anesthesia, and non-correspondence of current distribution for shocks delivered directly to the brain, then the most satisfying conclusion is that stimulation of the spinal cord initiates nervous input to the brain which generates the convulsive discharge. The greater stimulation of the spinal cord for forelimb to hindlimb shocks results in a lower total current threshold to cause the convulsion.

Other phenomena were observed during the investigation. First, it was observed that the strong contraction of muscles during the shock sometimes actually broke cervical vertebrae in rats. The flexibility thereby attained allowed the vertebrae to crush the spinal cord causing paraplegia and sometimes respiratory failure. Spinal column damage was observed only in rats and it is unlikely that it occurs in man. Second, it was observed in dogs that cerebrospinal fluid pressure increased by 20 to 60 mm Hg during the shock, but there was no significant difference between the pressure increase during 50 volt shocks and during 2400 volt shocks. This pressure increase is likely a consequence of strong muscular contractions during the shock. Third, arterial pressure increased 75 percent and pulse pressure nearly tripled after 2400 volt shocks but were virtually unchanged after 50 volt shocks.

There are other physiological effects of electricity, therapeutic as well as deleterious. The effects presented here are common, readily observable results of accidental electric shock.

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The Defense of pH and Oxygen Delivery

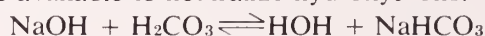
WILLIAM H. AUSTIN, M.D.

A primary concept in acid-base balance is buffering. For descriptive purposes, buffering may be considered as "chemical" and "physiological." These buffering processes, though separate, occur simultaneously.

The chemical buffer system is composed of a weak acid (e. g., carbonic) and its conjugate base (e.g., HCO_3^-) or salt (NaHCO_3). The blood buffering system is a complex one, being comprised of many buffer pairs, including those of bicarbonate, hemoglobin, protein and less important ones of phosphate, etc. The buffer pairs interact in such a fashion as to minimize changes in pH. Hydrogen ions introduced into the system react with the "salt" (conjugate base) of the weak acid to form a neutral salt and a weak acid:

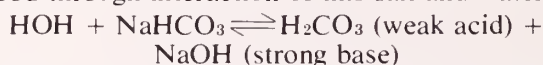


Thus, fewer hydrogen ions are free to alter the pH. If base is added to the system, hydrogen ions are made available to neutralize hydroxyl ions:



Since when one of the buffer pair decreases the other increases, some change in pH does occur, but this is less than if the added acid or base were unopposed. This may be better understood by inspection of the Henderson-Hasselbalch equation (below).

In actual practice, HCl or NaOH *per se* is not introduced into the system. Usually the added acid is lactic, acetoacetic, B Hydroxybuteric, carbonic or other organic acids.* The base of primary concern is bicarbonate. Its basic properties are best understood through interaction of this salt and water.

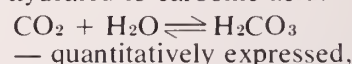


A less well-appreciated buffer system is hemoglobin. When PCO_2 is elevated, dissolved CO_2 enters the red blood cell, where it is hydrated to H_2CO_3 and dissociated to $\text{H}^+ + \text{HCO}_3^-$. The hydrogen ion is bound to hemoglobin, particularly in the reduced form (a weak acid), leaving HCO_3^- free to diffuse into plasma in exchange for chloride. The bicarbonate then becomes part of the carbonic acid buffer system and elevates the pH. If plasma HCO_3^- is high, bicarbonate diffuses into red cells, picks up H^+ from hemoglobin to become H_2CO_3 and thus reduce the alkalinity of the blood.

Although many chemical buffers exist, the carbonic acid system is the most important, and should be understood. All systems are in equilibrium with the same pH and the carbonic acid buffer system reflects all other systems and serves as a basis for diagnosis and therapy.

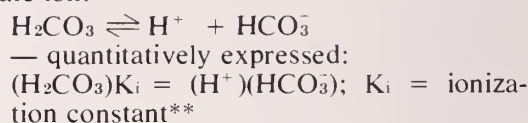
The Henderson-Hasselbalch equation and the "overall" dissociation constant for carbonic acid (pK') is a necessary starting point for the complete comprehension of the chemical buffering which occurs in body fluids. The overall dissociation reaction takes place in two phases:

1. The hydration reaction, in which dissolved CO_2 is hydrated to carbonic acid:

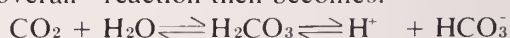


$(\text{CO}_2)\text{K}_h = \text{H}_2\text{CO}_3$; K_h = hydration constant (Hereafter, (CO_2) will be used to indicate dissolved CO_2)

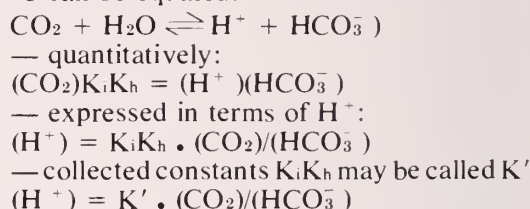
2. The ionization reaction, in which carbonic acid dissociates into a hydrogen and bicarbonate ion:



The "overall" reaction then becomes:



Since both dissolved CO_2 and $\text{H}^+ + \text{HCO}_3^-$ are in equilibrium with true carbonic acid, H_2CO_3 , these two can be equated:

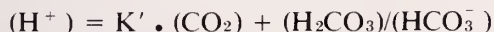


Although this derived equation is theoretically correct, it does not correspond to the experimental operations involved in determination of the "overall" dissociation constant. In determination of K' (actually pK' — see below), one experimentally fixes the (CO_2) concentration by equilibrating the plasma with a given partial pressure of carbon dioxide gas. This operation does not fix only the (CO_2) concentration by equilibration; it fixes the concentration of the dissolved carbon dioxide *plus* true carbonic acid in proportions determined by the hydration constant, K_h . This being the case, the numerator of the previous equation must be (CO_2)

*Carbonic acid cannot be buffered by the bicarbonate system, and is handled largely by hemoglobin.

**The terms of the equations are expressed as concentrations rather than activities. The argument is the same either way. Concentrations are more practical for this discussion, since they are used in actual practice, and, with the exception of pH (a function of hydrogen ion activity), for experimentally determining constants (pK').

+ (H₂CO₃), as this is what the analytic determination produces rather than what the thermodynamic derivation gives.¹ There is a small correction to be made for the few bicarbonate ions which arise from the ionization of H₂CO₃; however, this is so insignificant as to be disregarded. One must, therefore, rewrite the "overall" reaction as:



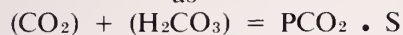
Since it has been recognized that this relationship may be more easily handled if the negative log of all components is taken, we may write the equation as follows, making:

$$-\log K' = pK' \text{ and } -\log (H^+) = pH^{***}$$

$$pH = pK' + \log \frac{(HCO_3^-)}{(CO_2) + (H_2CO_3)}^{****}$$

Since the solubility coefficient, S, for plasma is known, one can again rewrite the equation in terms of the partial pressure of CO₂ (i.e., PCO₂).

$$pH = pK' + \log \frac{(HCO_3^-)}{PCO_2 \cdot S}$$



S is the number of mm of CO₂ which can dissolve in plasma at 37°C. per mm PCO₂.² This value determined experimentally is .0307.³ pK', also experimentally determined, is found to be 6.10. This is the value obtained if whole blood pH,**** plasma CO₂ content and PCO₂ are known. The resultant pK' has been termed the "operational" pK'.⁴

$$pK' = pH - \log \left(\frac{TCO_2}{PCO_2 \cdot S} - 1 \right)$$

(where TCO₂ = CO₂ content)

It has been suggested that pH, chemical abnormalities and disease may affect the pK'.^{5,6,7} We have been unable to confirm these contentions, and have found pK' to be relatively constant under a wide variety of chemical and clinical conditions.^{4,8,9} The working Henderson-Hasselbalch equation then becomes:

$$pH = 6.10 + \log \frac{HCO_3^-}{PCO_2 \cdot .0307}$$

— or, in terms of CO₂ content (TCO₂):

$$pH = 6.10 + \log \left(\frac{TCO_2}{PCO_2 \cdot .0307} - 1 \right)$$

Tables have been developed to calculate PCO₂, CO₂ content and/or HCO₃⁻ from pH and one of the above.¹⁰ The construction and use of these tables is discussed elsewhere.¹¹ PCO₂/CO₂ — pH plots,¹⁰ line nomograms,¹² and a slide rule¹³ are also available for accurate estimation of the unknown of the Henderson-Hasselbalch equation.

By inspection of this Henderson-Hasselbalch equation, it may be seen that a primary decrease in PCO₂ will result in an increase in pH. An increase in PCO₂ decreases the pH. Likewise, increases in bicarbonate increase pH and vice versa. The degree of hydrogen ion change is minimized through the buffer action of the weak acid and its salt, and

mathematical documentation has been presented through analysis of dissociation of weak acids and the Henderson-Hasselbalch equation.

This chemical buffering system is a first line of defense against rapid changes in pH of either respiratory or metabolic origin. Fortunately it has been shown that blood acid-base changes for the most part accurately reflect the percentage changes in the whole body.¹⁴ pH, PCO₂ and HCO₃⁻ values in spinal fluid may not parallel blood levels because of the rapid shifts of dissolved CO₂ and the slower diffusion of bicarbonate.¹⁵

At first glance, it would appear that the bicarbonate buffer system is not optimal in the physiologic range because of the distance of blood pH from the pK' of the bicarbonate system. It should be recalled that chemical buffering is most efficient when the pH is close to the pK'. This should be apparent from inspection of a buffer curve. From this it may be seen that it takes a large change in acid or base to make a small change in pH when pH is near the pK'. Re-examination of the Henderson-Hasselbalch equation will confirm this.

It is interesting to note that if one recalculates the pK' to include the solubility coefficient of CO₂ (S), a pK' in the physiological range (7.60) is found.^{16,17} Examination of the aforementioned references will help clarify this concept.

Physiologic mechanisms augment chemical buffering and tend to minimize the fact that the pK' is not biologically ideal. Thus, the ultimate pH is not solely dependent on the chemical buffer capacity of the bicarbonate and other systems as though they existed in a closed compartment. The effectiveness of the CO₂ buffer is in large measure due to the fact that volatile acid fraction (H₂CO₃, PCO₂) can be rapidly altered by changes in alveolar ventilation. These changes in PCO₂ secondarily tend to offset bicarbonate changes (primary) and supplement chemical buffering. (See the Henderson-Hasselbalch equation.) This pulmonary mechanism for affecting PCO₂ is a form of "physiologic buffering."

Another facet of physiologic buffering is the renal control of bicarbonate. This mechanism, though

***Actually, pH is a function of hydrogen ion activity (aH) rather than concentration, since this is what the electrode measures.

****The term (CO₂) + (H₂CO₃) is referred to as "H₂CO₃" in many texts. Technically, this is obviously inaccurate. (See text.)

*****Plasma pH is difficult to measure directly, since pH varies with the temperature of separation, and glycolysis (with a fall in pH) occurs if separation is made at 37°C. That there is a difference between plasma and whole blood pH is well known, and is probably due to differences in liquid junction potentials at the plasma/blood-KCl interface of the pH measuring system. This difference is of the order of .01 pH units, but is not known accurately for all situations. It, therefore, seems logical to use whole blood pH rather than to calculate or measure plasma pH. The resultant pK' is then an "operational whole blood pK'."

relatively slow, is of great importance. Bicarbonate may be generated or excreted, depending on several factors. It has been noted for example that elevated PCO_2 (dissolved CO_2) stimulates reabsorption or regeneration of bicarbonate.***** This is accomplished by enhancing H^+ excretion in the renal tubule. This secreted hydrogen ion which arises from H_2CO_3 ($\text{CO}_2 + \text{H}_2\text{O} + \text{carbonic anhydrase} = \text{H}_2\text{CO}_3 \rightleftharpoons \text{H}^+ + \text{HCO}_3^-$) exchanges for a sodium ion. The sodium ion in turn associates with the HCO_3^- to form sodium bicarbonate which is returned to the blood. Thus, more bicarbonate is added to the bicarbonate buffer system for the control of hydrogen ion concentration or activity (pH). Likewise, diminished H^+ excretion results in lower bicarbonate which may enhance chemical buffering. Such bicarbonate loss may be part of the renal (physiologic) compensation for reduced PCO_2 which occurs in respiratory alkalosis. Non-renal metabolic compensation may be present in the form of lactic acid. Acid accumulation is also seen in respiratory alkalosis. Accumulation of lactic acid reduces HCO_3^- , thereby tending to bring the $\text{HCO}_3^-/\text{PCO}_2$ ratio nearer to normal. This has the effect of minimizing hydrogen ion change. (See Henderson-Hasselbalch equation.)

These increases or decreases in PCO_2 or bicarbonate which occur secondary to addition or loss of acid or base are called *compensatory* changes. They are not to be confused with primary change in acid, (H_2CO_3), organic accumulation, etc., or base (loss of H_2CO_3 , addition of bicarbonate, etc.).

The changes which occur outside the vascular space are much less well known, and we must "biopsy" the blood to make judgements relative to therapy which involves the entire organism. It is true, for example, that the difference in diffusability of dissolved CO_2 and bicarbonate into the CSF alter spinal fluid pH in a manner not always reflected by the blood. The rapid correction of acid-base imbalance may result in prompt change in PCO_2 (and pH). That this may have undesirable effects has been raised; however, conclusive information relative to these phenomena is not available. Out of the foregoing and other experiences most students of acid-base imbalance would agree that the rate of correction of a defect should equal the rate at which the defect developed,¹⁸ and that repeated blood samples should serve as a guide. Formulae for correction are no substitute for serial clinical and chemical evaluation.

The main purpose of blood gas determinations is to understand the effect of acid-base imbalance on body function. Perhaps the most important changes occur within the circulatory system. Recently a most comprehensive study of cardiac output with pH and PCO_2 disturbances has been made.¹⁹ These

interpretations are clearly summarized in diagrammatic fashion. In general, low pH and low PCO_2 depress output, while alkalosis and hypercapnia increase it. The combination of acidosis and hypercapnia have varying effects, depending on the degree of pH versus PCO_2 changes.

Acid-base balance has a definite effect on myocardial irritability and contractibility.²⁰ Acidosis and hypocapnia are the cause of atrial tachycardia, ventricular premature contractions and tachycardia. The arrhythmias are more common in patients receiving digitalis preparations, and carry a high mortality. Acute myocardial infarction is frequently associated with metabolic acidosis, which may be a factor in the arrhythmias seen in this condition.²¹ Arterial blood gas determinations are always appropriate in patients with arrhythmias and acute myocardial infarction.

Metabolic alkalosis induced by a rapid drop in PCO_2 in ventilated patients with chronic respiratory acidosis is frequently associated with intractable ventricular arrhythmias.¹⁸ Correcting hypoxia, but not hypercapnia (so that alkalosis is not produced), is frequently necessary in this situation. It has also been suggested that²² potassium shifts may be one mechanism in cardiac arrest following rapid correction of hypercapnia.

That regional blood flow is altered by acid-base changes is well-known.²³ The most important change is the increase or decrease to cerebral flow with high or low PCO_2 .²⁴ The undesirable results of low cerebral flow are obvious, and may account for the neurologic changes seen in respiratory alkalosis. Severe neurologic findings, including coma, are also seen in metabolic alkalosis.²⁵

The effect of acid-base changes on the shape of the oxygen dissociation curve is of great importance.²⁶ For practical purposes, it may be considered that acidosis and hypercapnia shift the curve to the right, increasing the P_{50} (the PO_2 required to produce 50% hemoglobin saturation) while alkalosis and hypocapnia "push" the curve to the left. This means acidotic blood is less easily saturated, but gives up oxygen easily to the tissues. The reverse is true for alkalotic blood. Therefore, at high O_2 tension acidotic blood may be saturated and give up oxygen easily to the tissues. This would seem desirable, provided that the acidosis does not reduce cardiac output and tissue perfusion. In alkalotic states, high venous oxygen tension does not imply good tissue oxygenation.

Naeraa²⁷ has pointed out that pH and PCO_2 appear to alter the oxygen dissociation independently. Recently, Severinghaus has reassessed this problem.¹³ It appears that if PCO_2 is changed causing pH to vary (HCO_3^- and base excess (BE) remaining constant except for compensation changes), then shifts in the oxygen dissociation curve (Bohr Curve) are said to be "usual Bohr-effect changes." On the other hand, if the PCO_2 is held constant and

*****Other mechanisms such as K^+ depletion may also stimulate bicarbonate formation by the kidney.

"base" altered, there appears to be another shift which is related to a change in base excess. The two effects may or may not be additive. As Severinghaus states, "Empirically, the effects may be best expressed as the usual (CO₂ dependent) Bohr correction factor, and a factor for the change in buffer base produced by the fixed acid."¹³

$$\Delta \log PO_2 = -0.48 \Delta pH + .0013 BE$$

This does not mean that base excess *per se* in any way alters the curve. The author simply has used BE as an expression of the "metabolic" portion of the buffer system (e.g., HCO₃⁻). A similar equation using HCO₃⁻ could be written as follows:

$$\Delta \log PO_2 = -.48 \Delta pH + .0041 \Delta HCO_3^-$$

A slide rule¹³ and set of tables¹² are available to obtain oxygen saturations "corrected" for the factors discussed above. Temperature,^{13,28} 2,3DPG²⁹ and other factors will also produce variations in the shape of the dissociation curve, and should be given due consideration.

In assessing the importance of acid-base balance, one must be primarily concerned with tissue oxygen delivery. To what extent do acid-base changes affect cardiac output, the shape of the Bohr curve, or regional blood flow? If these parameters are altered, what is the best mode of correction? These are the reasons acid-base balance is important. Certainly other variations in bodily function may occur. However, tissue oxygenation must be foremost.

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PSRO's — An Analysis From The Law

JAMES H. BONNEY, M.D., J.D.

I. Declaration of Purpose

- A. In order to promote effective, efficient and economical delivery of health care for which payment *may* be made under this Act. (SS Act).
- B. Services will conform to appropriate professional standards and these services *will* be paid —
 - 1. only when *medically necessary* as determined by reasonable limits of professional discretion; and
 - 2. when by hospitals or other health care facility on an inpatient basis on for *such period* that they could not be provided for more economically.

II. Designations of PSRO's

- A. By January 1, 1974, the Secretary shall establish (throughout U.S.) appropriate areas to which PSRO's may be designated.
- B. Then enter into an agreement, at the earliest practicable date with a *qualified* organization which can then be *conditionally* designated as the PSRO.
- C. Then if the organization meets the obligations and requirements it will be designated as the PSRO for the area.
- D. Qualified organization defined —
 - 1. a. non-profit professional association (or component).
 - b. composed of doctors (M.D., D.O.) who practice in that area.
 - c. includes a substantial proportion of all such physicians.
 - d. which has professional competence to review health care services of the type and kinds under this Act.
 - e. membership is to be voluntary and open to all practitioners without requirement of membership or payment of dues to any organized medical society or association.
 - f. does not restrict the eligibility of any member for service as an officer of PSRO.or 2. such other agency or organization which the Secretary determines to be of professional competence and otherwise suitable *and* the organization submits a formal plan and is willing and capable of performing at a reasonable cost the duties, functions, and activities of PSRO.
- E. The Secretary shall not enter in an agreement with the last named group unless there is no medical organization in the area until January 1, 1976.
- F. Agreement established for 12 months (unless

under trial period).

- G. It may be terminated —
 - 1. by the organization upon such notice as prescribed in regulations (except can't be over 3 months).
 - 2. by the Secretary upon reasonable notice as per regulations but only after a formal hearing to determine whether or not the organization is not substantially complying with the agreement.
- H. Waiver — Secretary may waive any or all of the review, certification, or similar activities where he finds on the basis of substantial evidence that such activities are not needed for the provision of adequate review and control.
- I. Agreement Notice —
 - 1. If an agreement is to be entered into prior to January 1, 1976, prior to entering any agreement, the Secretary shall notify the practitioners of the intention to enter into such an agreement with such an organization.
 - 2. If within a reasonable time after notification 10% of the practitioners object, a poll will be conducted and if 50% of the responding doctors indicate that such an organization is not representative then there shall be no agreement.

III. Trial Period for PSRO's

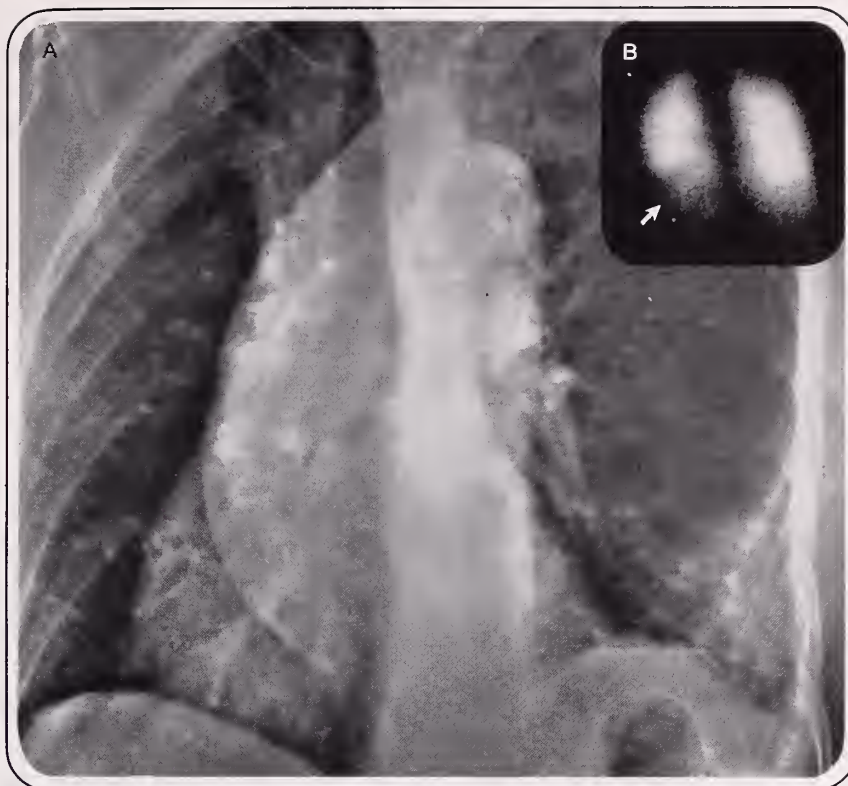
- A. Organization has to submit a *plan* and it has to be approved before being designated on a conditional basis.
- B. Trial period may not be over 24 months and during it the PSRO may perform only the duties designated by the Secretary. Then progressively increase responsibilities. Then they may be considered a qualified organization if the Secretary finds that they can function effectively.
- C. Any conditional agreement may be terminated upon 90 days notice by either party.

IV. Duties and Functions of PSRO's

- A. 1. Review professional activities of physicians and other providers of health care services for which payment may be made under this Act for the purpose of determining whether —
 - a. services and items were medically necessary.
 - b. the quality meets professionally recognized standards.
 - c. length of stay in hospitals and other health care facilities is appropriate.

Continued on Page 9

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infarction
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The irritations of man's day are often reflected in his gut.

The causes of irritable colon and the diarrheal symptoms that often accompany it can be as diverse as the systemic and emotional irritations man is faced with daily.

Although the mucoid nature of stools and the occurrence of diarrheal episodes coincident with times of emotional stress may be valuable clues to the functional nature of the disorder, irritable colon must often be diagnosed by exclusion. Such diagnostic exploration takes time. Discovery of the nature of any emotional problems may take more. During that time, Lomotil® is an ideal agent for controlling diarrheal symptoms.

Lomotil tablets are small, easy to carry and easy to take. They act promptly and effectively. Secondary effects are relatively infrequent and, once the first force of the diarrhea is controlled, maintenance is frequently effective on as little as one fourth of the initial dosage.

These same characteristics make Lomotil useful in controlling the diarrhea associated with gastroenteritis, antibiotic therapy and acute infections.



IMPORTANT INFORMATION: This is a Schedule V substance by Federal law; diphenoxylate HCl is chemically related to meperidine. In case of overdose or individual hypersensitivity, reactions similar to those after meperidine or morphine overdose may occur; treatment is similar to that for meperidine or morphine intoxication (prolonged and careful monitoring). Respiratory depression may recur in spite of an initial response to Nalline® (nalorphine HCl) or may be evidenced as late as 30 hours after ingestion. LOMOTIL IS NOT AN INNOCUOUS DRUG AND DOSAGE RECOMMENDATIONS SHOULD BE STRICTLY ADHERED TO, ESPECIALLY IN CHILDREN. THIS MEDICATION SHOULD BE KEPT OUT OF REACH OF CHILDREN.

Indications: Lomotil is effective as adjunctive therapy in the management of diarrhea.

Contraindications: In children less than 2 years, due to the decreased safety margin in younger age groups, and in patients who are jaundiced or hypersensitive to diphenoxylate HCl or atropine.

Warnings: Use with caution in young children, because of variable response, and with extreme caution in patients with cirrhosis and other advanced hepatic disease or abnormal liver function tests, because of possible hepatic coma. Diphenoxylate HCl may potentiate the action of barbiturates, tranquilizers and alcohol. In theory, the concurrent use with monoamine oxidase inhibitors could precipitate hypertensive crisis.

Usage in pregnancy: Weigh the potential benefits against possible risks before using during pregnancy, lactation or in women of childbearing age. Diphenoxylate HCl and atropine are secreted in the breast milk of nursing mothers.

Precautions: Addiction (dependency) to diphenoxylate HCl is theoretically possible at high dosage. Do not exceed recommended dosages. Administer with caution to patients receiving addicting drugs or known to be addiction prone or having a history of drug abuse. The subtherapeutic amount of atropine is added to discourage deliberate overdose; strictly observe contraindications, warnings and precautions for atropine; use with caution in children since signs of atropinism may occur even with the recommended dosage.

Adverse reactions: Atropine effects include dryness of skin and mucous membranes, flushing and urinary retention. Other side effects with Lomotil include nausea, sedation, vomiting, swelling of the gums, abdominal discomfort, respiratory depression, numbness of the extremities, headache, dizziness, depression, malaise, drowsiness, coma, lethargy, anorexia, restlessness, euphoria, pruritus, angioneurotic edema, giant urticaria and paralytic ileus.

Dosage and administration: Lomotil is contraindicated in children less than 2 years old. Use only Lomotil liquid for children 2 to 12 years old. For ages 2 to 5 years, 4 ml. (2 mg.) t.i.d.; 5 to 8 years, 4 ml. (2 mg.) q.i.d.; 8 to 12 years, 4 ml. (2 mg.) 5 times daily; adults, two tablets (5 mg.) t.i.d. to two tablets (5 mg.) q.i.d. or two regular teaspoonfuls (10 ml., 5 mg.) q.i.d. Maintenance dosage may be as low as one fourth of the initial dosage. Make downward dosage adjustment as soon as initial symptoms are controlled.

Overdosage: Keep the medication out of the reach of children since accidental overdose may cause severe, even fatal, respiratory depression. Signs of overdose include flushing, lethargy or coma, hypotonic reflexes, nystagmus, pinpoint pupils, tachycardia and respiratory depression which may occur 12 to 30 hours after overdose. Evacuate stomach by lavage, establish a patent airway and, when necessary, assist respiration mechanically. Use a narcotic antagonist in severe respiratory depression. Observation should extend over at least 48 hours.

Dosage forms: Tablets, 2.5 mg. of diphenoxylate HCl with 0.025 mg. of atropine sulfate. Liquid, 2.5 mg. of diphenoxylate HCl and 0.025 mg. of atropine sulfate per 5 ml. A plastic dropper calibrated in increments of ½ ml. (total capacity, 2 ml.) accompanies each 2-oz. bottle of Lomotil liquid.

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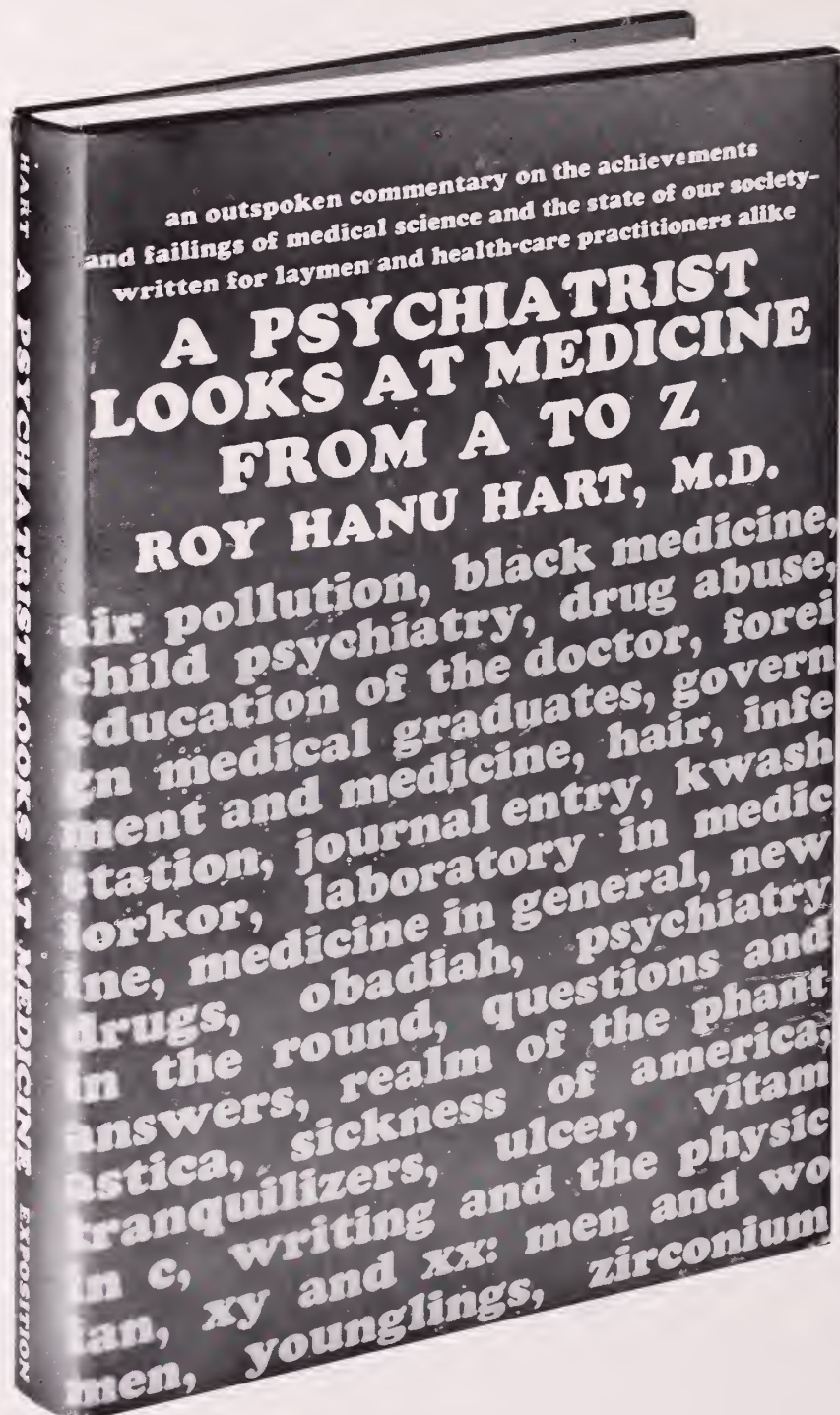
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2. Have the authority to determine, *in advance* in the case of —
 - a. any elective admission to a hospital or other health care facility.
 - b. any other health care service which will consist of extended or costly courses of treatment.
 - c. have to meet the criteria of #1 (a. & c.).
3. Shall determine and publish, from time to time, type and kinds of cases, to Secretary to carry on the purpose of this part.
4. Arrange for the maintenance of the review of profiles of care and services received and provided with respect to patients, protect patients identity for evaluation consistent with the purposes of this part, *and* regularly review profiles kept on (a., b., & c) (on an on-going basis).
5. Physicians assigned on PSRO for review of hospital care must be on the active hospital staff of one of the participating hospitals in the area (and may participate in own hospital — not mandatory) unless a member of another reviewing committee upon which the PSRO may utilize.
6. No physician shall be permitted to review —
 - a. services to a patient whom he was directly or indirectly involved.
 - b. health care provided in an institution in which he or his family has a financial interest (spouse, — not divorced or separated, children (adopted), grandchildren, parents and grandparents).
- B. The PSRO is authorized in accordance with regulations prescribed by the Secretary —
 1. to utilize specialists.
 2. to undertake professional inquiry either before or after, or both before or after, the provision of services.
 3. examine all pertinent records in line with their duties.
 4. inspect the facilities in which care is rendered or services provided of any practitioner or provider.
- C. PSRO's shall use only duly licensed practitioners to make final determinations on the professional conduct or any act performed by any other duly licensed practitioner.
- D. In order to familiarize physicians with the review functions of the PSRO and promote acceptance of such functions the PSRO shall —
 1. encourage all physicians to participate as reviewers.
 2. provide rotating physician membership.
 3. assure broadest representation of various types of practice.
 4. publicize in medical periodicals functions and activities of PSRO.
- E. PSRO will accept findings of review committees

of facilities as long as the committees demonstrate their effectiveness to the PSRO —

1. except where the Secretary disapproves for good cause.
2. Secretary may prescribe regulations to carry out this section.
- F. 1. An agreement between the Secretary and any organization shall provide that such organization will —
 - a. perform duties required by this part or under regulations of the Secretary.
 - b. collect data relevant to its functions and maintain such records in such a form as the Secretary may require and permit access to the Secretary.
2. Secretary will make payments to such organizations which are reasonable and necessary as determined by the Secretary.
- G. PSRO may request to the Secretary that it be charged with reviewing *other* health care services.

V. *Norms of Health Care Services for Various Illnesses or Health Conditions*

- A. Each PSRO shall develop norms of care. The National Professional Standards Review Council shall provide technical assistance to the organization. Where the norms are significantly different in any PSRO, they shall be so informed; but if there is a reasonable basis for different norms these may be approved by the National Professional Standards Review Council.
- B. Such norms with respect to treatment shall include —
 1. taking into account differing but acceptable modes of treatment.
 2. evaluating the types of health care facility and if it is the most economic one feasible.
- C. 1. The National Professional Standards Review Council will provide appropriate materials indicating the regional norms to be utilized to each PSRO and any agency or person performing review functions. Such data will be reviewed and revised from time to time.
2. Each review organization, agency, or person shall utilize the norms developed as a principal point of evaluation.
- D. 1. Each PSRO will —
 - a. specify the appropriate points in time after the admission of a patient and the attending physician shall execute a certification.
 - b. require the physician to include such information that the PSRO can properly evaluate the medical necessity of further institutionalization.
2. The points in time will usually not be later than the 50th percentile of lengths-of-stay for patients in similar age groups with similar

diagnoses and be consistent with the developed norms.

VI. *Submission of Reports by PSRO's*

Any PSRO that determines a health care practitioner, hospital, or other health care facility, agency or organization has violated any obligations it should report it to the Statewide Professional Standards Review Council with its recommendations. The State Council shall review the report and promptly transmit the report and recommendations of the PSRO with its own comments and recommendations to the Secretary. The Secretary may then utilize a PSRO in lieu of a program review team.

VII. *Requirement of Review Approval as Condition of Payment of Claims*

- A. No payment for service unless the Secretary determines that the claimant is without fault if –
 - 1. the service is subject to review by a PSRO or other agency; and
 - 2. if PSRO or other agency has disapproved of the service and notified the practitioner or provider and the beneficiary.
- B. PSRO should also promptly notify the agency or organization having responsibility for acting upon claims for payment.

VIII. *Hearings and Review by Secretary*

- A. Any dissatisfied beneficiary, provider or practitioner may ask for a reconsideration by the same PSRO and if the decision is reaffirmed and if at least \$100.00 is in controversy, the matter may be appealed to the Statewide Professional Review Council and revised.
- B. If any party is still dissatisfied or if there is no Statewide Professional Standards Review Council, any matter in controversy \$100.00 or over is to be appealed to the Secretary and then if \$1,000.00 is in controversy, then to judicial review (courts).
- C. Any review in this section shall be in lieu of any review, hearing, or appeal under this Act with respect to the same issue.

IX. *Obligations of Health Care Practitioners and Providers of Health Care Services:*

Sanctions and Penalties: Hearings and Review

- A. 1. It shall be the obligation of all parties who provide health care services for which payment may be made to assure that services of items ordered or provided –
 - a. will be medically necessary.
 - b. will be of a quality which meets professionally recognized standards.
 - c. will be supported by evidence in such form as required by the PSRO.
 - d. the *organization* shall also have the duty to supervise that the services are medi-

cally necessary and of professional quality.

- 2. Each health care provider shall have an obligation within reasonable limits of professional discretion, *not* to authorize any individual to be admitted as an inpatient or to continue as an inpatient unless –
 - a. care is consistent with professional standards and is medically necessary.
 - b. I. care cannot be given in a lesser care facility.
 - II. or if can be cared for in a lesser care facility, there is no such facility, or no such facility which is available to provide care to a patient at the time when care is needed by him.
- B. 1. If after reasonable notice and opportunity for discussion with the practitioner or provider concerned, any PSRO submits a report and recommendation to the Secretary and if it is *determined* that practitioner or provider has –
 - a. failed in a substantial number of cases to comply with obligations of the Act, or
 - b. by grossly and flagrantly violating any such obligation in one or more instances, the Secretary may then exclude the practitioner or party from eligibility to provide such services on a *reimbursable* basis.
- 2. A determination by the Secretary under this subsection shall be effective at such time and upon such reasonable notice to the public and to the person furnishing the services involved as may be specified in regulations. Such *determinations* remain in effect until the Secretary finds and gives reasonable notice to the public that the basis for such determination has been removed and that there is reasonable assurance that it will not recur.
- 3. The Secretary may require that any practitioner or provider who has lost his eligibility status pay to the United States an amount not in excess of the actual or estimated cost of the medically improper or unnecessary services so provided, or (if less) \$5,000.00. Such amount may be deducted from future payments.
- 4. Any person who is dissatisfied with the determinations of the Secretary have the same appeal rights as the beneficiary.
- C. Each PSRO and each Statewide PSR Council may enlist the support of any professionals or governmental organization having influence or authority over providers.

X. *Notice of Practitioner or Provider*

Whenever a PSRO denies a request by a provider or indicates that a provider has violated any obligation it shall immediately give notice to the provider of

such a determination and the basis therefore, and shall provide him with appropriate opportunity for discussion and review of the matter.

XI. Statewide Professional Standards Review Councils; Advisory Groups to Such Councils

- A. For any state with three or more PSRO's the Secretary shall establish a Statewide Professional Standards Review Council.
- B. The membership of such a Council shall be appointed by the Secretary and shall consist of –
 - 1. one representative from each PSRO.
 - 2. four physicians; two from the State medical society and two from the State hospital association.
 - 3. four persons knowledgeable in health care as representatives of the public with at least 2 of these persons recommended by the Governor of such State.
- C. Duties and functions of Statewide PSR Council –
 - 1. coordinate the activities of and disseminate information and data among the PSRO, and assisting the Secretary in promoting the program.
 - 2. assist the Secretary in evaluating each PSRO.
 - 3. to assist the Secretary when he finds it necessary to replace a PSRO.
- D. Secretary is to agree with Council for reasonable expenses and payments to the Council as determined by the Secretary.
- E. 1. The Statewide PSR Council or a state with no Council in the state the PSRO's shall be advised and assisted by an advisory group (of not fewer than seven or more than eleven) which shall be made up of representatives of health care practitioners (other than physicians) and hospitals and other health care facilities for which payment may be made.
- 2. The Secretary shall use regulations in selecting such groups.
- 3. Expenses reasonably and necessarily incurred by such group as determined by the Secretary shall be considered necessarily incurred by the Statewide Professional Standard Review Council.

XII. National Professional Standards Review Council

- A. 1. This "Council" shall consist of eleven physicians appointed by the Secretary.
- 2. Term will be three years and members shall be eligible for reappointment.
- 3. Secretary shall from time to time designate a chairman.
- B. Physicians will be those who have been recommended by national organizations recognized by the Secretary and also recommended by con-

sumer groups.

- C. The Secretary shall make available consultants, secretarial, clinical, and other assistance available to HEW.
- D. "Council" member will be compensated.
- E. Duties of the "Council" –
 - 1. advise the Secretary in the administration of this part.
 - 2. provide development and distribution among the Statewide PSR Councils and PSRO's of information and data which will assist them.
 - 3. review the operations of Statewide PSR Councils and PSRO's.
 - 4. make or arrange for the making of studies and investigations with a view to developing and recommending to the Secretary and Congress measures designed more effectively to run the program.
- F. The "Council" shall from time to time but not less than annually submit a report to the Secretary and to the Congress of its findings of its studies.

XIII. Application of This Part to Certain State Programs Receiving Federal Financial Assistance.
State plans must conform to some requirements.

XIV. Correlation of Functions Between PSRO's and Administrative Instrumentalities
Through regulations, the Secretary will correlate activities with other agencies and organizations.

XV. Prohibition Against Disclosure of Information

- A. All data and information acquired by PSRO will be held in confidence.
- B. It shall be unlawful to disclose any information and a violation could cause a fine of not more than \$1,000.00 and imprisonment of not more than six months, or both, together with the cost of prosecution.

XVI. Limitation on Liability for Persons Providing Information and for Members and Employees of PSRO, and for Health Care Practitioners and Providers

- A. No one can be held responsible unless –
 - 1. such information is unrelated to the performances of the duties and functions of such organization, or
 - 2. such information is false and the person knew, or had reason to believe, that such information was false.
- B. No member or employee of PSRO who uses information correctly can be held criminally or civilly liable unless motivated by malice.
- C. No practitioner or provider can be held liable for release of justified information.

Continued on Page 15

Report of the American Medical Association Delegate to Clinical Convention

Anaheim, California — December 2-5, 1973

ROBERT E. MCAFEE, M.D.

Despite the introduction of some 70 resolutions and 30 separate reports of various councils of the House of Delegates, as well as the Board of Trustees, never has one issue seemed to dominate the discussion and emotion of a meeting as did that concerned with Professional Standards Review Organization. The AMA in the past has previously opposed the institution of the concept of PSRO until the annual session of 1973 at which time a policy was adopted "that while ultimately repeal of PSRO legislation may be required to preserve the high quality of patient care, the highest priority on developing and pursuing appropriate amendments to preserve the high quality of patient care should be undertaken." Since that time, considerable militant opposition to the institution of any facet of PSRO has arisen in the country as exemplified by at least 10 separate resolutions at this convention advising repeal, continued noncompliance or other negative action. Considerable discussion was held throughout the meeting, beginning with a day-long session devoted entirely to the subject on the Saturday preceding the opening of the House of Delegates, continuing with discussion throughout the convention by members of the Department of Health, Education and Welfare as personified by Dr. Charles C. Edwards, assistant secretary of Department of Health, Education and Welfare, Congressman Crane of Illinois, an avid and outspoken proponent for repeal of federal legislation in the field of PSRO, the introduction of an open letter to the House of Delegates from some 34 members of the House of Representatives of the Congress of the United States, advocating their support for repeal if the AMA would take an active position in this regard, as well as numerous reference committee speakers speaking both pro and con regarding the implementation of this controversial piece of legislation.

The basic report of official AMA policy was presented by the Board of Trustees and the Council on Medical Service in their Report EE and was submitted at this convention. The reference committee, after prolonged yet democratic testimony presented at the hearing, recommended the approval of this report and the filing of the other resolutions calling for repeal. This prompted considerable discussion again on the floor of the House of Delegates when presented, culminating in the presentation of a joint amendment presented by the States of California,

Illinois, Michigan, Kentucky, Louisiana and New York. The amended amendment collated the feelings of many people who still favored active repeal while at the same time encompassing the active role that organized medicine must take in implementing the rules and regulations of possible PSRO legislation. A substantial portion of the Board of Trustees Report EE is presented as amended by the House for the information of the members of the Maine Medical Association.

Significant portions of Report EE of the Board of Trustees and Council on Medical Service follows:

"For the information of the House of Delegates, the Board of Trustees and the Council on Medical Service feel obligated to make the following observations:

"(1) Our very best information from Washington and bipartisan Congressional leadership is that there is no current political viability in an effort to repeal PSRO.

"(2) Similar exploration suggests that there is Congressional receptivity to consideration of amendments to the law.

"(3) "Non-participation" can be interpreted in several ways. Non-participation by constituent and component medical societies refers to the unwillingness of such societies to cooperate in the development of PSROs. Non-participation by individual physicians implies unwillingness to provide professional reimbursable services for Medicare and Medicaid beneficiaries. In general, non-participation by organized medicine in the development of PSROs would be an abrogation by the profession of its responsibility to the public and the profession to assure that monitoring of the quality and cost of medical care is professionally oriented. Regardless of participation or non-participation by physicians or medical organizations, no physician can escape review of his Medicare and Medicaid services as long as the law remains in force.

"(4) A significant proportion of the profession appears to agree that amendments to the law can improve it. The Board of Trustees and its Council on Legislation are currently preparing a series of amendments.

"(5) Experience in developing the mandated AMA leadership role in PSRO implementation has identified many areas where such amendments may be necessary.

“(6) Government resistance to Association recommendations in some areas indicates that, for certain facets of the program, amendment may be a more effective approach than attempts to influence regulations and directives.

“(7) The PSRO law is widely interpreted as a cost control measure. However, there is reason to believe that it may generate costs in excess of savings.

“(8) If PSRO legislation were to be repealed, other cost control measures now existing in law would be applied. Other legislative measures for cost containment would certainly be introduced.

“In the light of the observations noted above, the options available to the Association are:

“(A) To improve the law through development of regulations and administrative practices;

“(B) To seek amendments to the law which would remove the undesirable features of the present statute;

“(C) To promote repeal of the law;

“(D) To suggest non-participation by all constituent and component societies. Such non-participation would specifically refer to the establishment of a PSRO by a unit of organized medicine.

“Finally, it should be recognized that these options are not necessarily mutually exclusive.

“The Board of Trustees and the Council on Medical Service are aware of the possibility that the House of Delegates could elect to support the idea of repeal of the law. However, the practical considerations indicate that this may be impossible to achieve, so that there should be a policy position which would prevail so long as the law remains in force.

“The AMA affirms the following principles:

“1. That the medical profession remains firmly committed to the principle of peer review, under professional direction, and

“2. That medical society programs of proven effectiveness should not be dismantled by PSRO implementations, and

“3. That the Association suggests that each hospital medical staff, working with the local medical society, continue to develop its own peer review,

based upon principles of sound medical practice and documentable objective criteria, so as to certify that objective review of quality and utilization does take place; to make these review procedures sufficiently strong as to be unassailable by any outside party or parties; and that the local and state medical societies take all legal steps to resist the intrusion of any third party into the practice of medicine, and

“4. That this House of Delegates, as individual physicians and through the Board of Trustees and its Council on Legislation, work to inform the public and legislators as to the potential deleterious effects of this law on the quality, confidentiality and cost of medical care; and the hope that the Congress in their wisdom will respond by either repeal, modification, or interpretation of rules which will protect the public.

“The considered opinion of this House of Delegates is that the best interests of the American people, our patients, would be served by the repeal of the present PSRO legislation. It is also believed that this is consistent with our longstanding policy and opposition to this legislation prior to passage.

“The considered opinion of the Board of Trustees and the Council on Medical Service is to recommend to the House of Delegates that the AMA continue to exert its leadership by supporting constructive amendments to the PSRO law, coupled with continuation of the effort to develop appropriate rules and regulations.”

The near unanimous acceptance of this report by the entire House of Delegates after this four-day intensive consideration of the problems presented by PSRO, truly seemed to represent a fair, democratic and workable solution to the problem. No physician was present who felt that the PSRO law was a good law and that it should be supported in all its facets. However, the concept of continuing peer review done by the medical profession, as well as the concept of public accountability for the expenditure of public funds, remain as concepts accepted by most physicians and expected by most citizens.

7 Bramhall St., Portland, Maine 04102

KEOGH LIBERALIZATION AND PENSION REFORM

JOHN J. CASEY, Esq.*

The long-awaited liberalization of the Keogh Law has been shelved again.

A part of the Pension Reform Bill, the provision which would have liberalized Keogh to a contribution of 15% of earned income or \$7,500 — whichever is less — passed the United States Senate on September 18, 1973 by a unanimous vote of 93-0.

However, when the Bill was sent to the House Ways and Means Committee, it was shelved after a few days of consideration. This move took everyone by surprise. It was generally believed the House Committee would merely alter the Bill slightly and report it out for Congressional approval with the intent that it become law by January 1, 1974.

It is now apparent the House Committee delayed the Bill because of the loss of tax revenues (\$320 million) that Keogh liberalization and pension reform represented, and because of opposition from the Nixon administration and organized business which objected to the limitation of corporate pension plans built into the provision.

In abandoning the Bill, the House Committee stated their intention to write their own version of the Keogh and Pension Bill rather than editing the Senate version.

The Bill was important to the physician, not only because its contents effected the tax-sheltered retirement plan under both the Keogh Law and the corporate pension plan, but also as an indication of the general Congressional attitude toward the practice of medicine.

In order to understand these developments, one must go back to 1968 when the Keogh Bill was liberalized, allowing physicians to deduct the entire contribution of 10% of their earned income or \$2,500 — whichever was less. This was done after many years of pressure to finally give the self-employed physician the ability to have a tax-sheltered pension plan.

The then liberalized Keogh, while better than anything that had been provided before, wasn't nearly as attractive as the tax-sheltered pension plan that could have been provided for the same physician were he a corporate employee.

After having this pointed out by their advisors, some physicians started to incorporate their practices to take advantage of the more attractive corporate pension plans. (The IRS, of course, had concurrently been fighting the concept of incorporation by professionals in the courts. But on August 8, 1969, the IRS lost its final legal battle and conceded to the principle of professional incorporation.)

The concept again came under attack in early October 1969. Senator Russell B. Long (D-La.) attempted to control the type of pension plan a professional could have. In an amendment, he called for a plan to equalize professional corporation pension plans and self-employed Keogh plans at a level of 10% of earned income or \$2,500 — whichever was less.

The intended effect was to do away with the professional corporation. By a vote of 65-25, however, the Senate roundly defeated Senator Long's amendment.

It should be understood, however, that in defeating the amendment, the Senate was not really concerned with protecting the privilege of professional incorporation. Instead, they felt the amendment was discriminatory, since it legislated pension laws for only one type of corporation.

Senator Long entered the discussion again in September 1973, this time as chairman of the Senate Finance Committee. His more recent proposal was designed to put an end to professional incorporation by legislating the type of pension plan such a corporation could have.

Rather than attempting to legislate directly against it, as he had done four years earlier, Senator Long proposed to include the professional corporation in a larger category of corporations to be defined by stock ownership.

Under his proposal it was stated that members of a corporation, in which the participant in a pension plan owns more than 2% of the stock, could have a pension plan equivalent to a hereby revised Keogh plan of 15% of earned income or \$7,500 — whichever is less. This proposal too would have put an end to the trend toward professional incorporation.

*John J. Casey, Esq., is the president of New England Physicians Advisory Services, Inc. which provides a full range of financial services for physicians. Its subsidiary, New England Physicians Retirement Services, Inc. carries the endorsement of the Council of the New England State Medical Societies to provide tax sheltered Keogh and pension plans for physicians in New England. For further information, write: New England Physicians Advisory Services, Inc., One Wells Avenue, Newton, Mass. 02159 (617/965-5100); or contact them through the executive offices of your state society.

This Bill, which liberalized Keogh and at the same time limited professional corporation pension plans to matching 15% and \$7,500 figures, actually was reported out of the Senate Finance Committee and scheduled for a full Senate vote on September 11.

The Bill came under strong opposition, however, since in redefining professional corporations to include them in a broader category, the Bill actually limited pension plans for over 90% of the nation's corporations.

Because of this, the Senate vote was postponed until September 18 and the Senate Finance Committee met in emergency session to rewrite portions of the Bill. In the session, the Committee kept the 2% stock ownership rule, but instead of having a Keogh-type pension plan it was decided that this type of corporation could have a pension plan allowing for retirement benefits of 75% of pay — not to exceed \$75,000 per year. (Under today's laws, a corporate employee can retire at 100% of pay with no dollar limitation attached.)

Nevertheless, when the Bill did get to the Senate floor, the 2% stock ownership clause was dropped since the Senate felt it should not distinguish between corporation pension plans on the basis of stock ownership.

The Senate, therefore, adopted a bill which in-

cluded the liberalization of Keogh to 15% or \$7,500 and coupled it with a limitation of all corporate pension plans to retirement benefits of 75% of pay or \$75,000. It then passed its version by a unanimous vote of 93-0.

The measure was then sent to the House Ways and Means Committee where (as noted above) it was expected to pass with only minor alterations and become law in January 1974. It should be additionally noted, however, the ensuing Administration opposition was incurred because the Senate version substantially reduced the pension benefits of many high paid officers in some of this country's largest corporations. This, augmented by the loss of tax revenue built into the Bill's design, was sufficient cause to shelve it until next year.

Though the legislation on this matter is still undecided, several conclusions can be drawn. First, many experts agree that the threat to professional incorporation is essentially over. The courts have upheld its constitutional legality and legislators have been unable to diminish its attractiveness by proposals adverse to tax-sheltered pension benefits.

On the other hand most observers also agree that, while at some future time Keogh will be liberalized, it has been a fruitless debate, already four years old.

PSRO'S — An Analysis From The Law — *Continued from Page 11*

XVII. Authorization for Use of Certain Funds to Administer the Provisions of This Part

Expenses for administration of this part shall be payable from —

- A. funds in the Federal Hospital Insurance Trust Fund,
- B. funds in the Federal Supplementary Medical Insurance Trust Fund; and
- C. funds appropriated to carry out the health care provisions of the several titles of this Act.
- D. Such funds have to be deemed fair and equitable by the Secretary.

XVIII. Technical Assistance to Organizations Desiring to Be Designated as PSRO's

The Secretary is authorized to provide all necessary

technical and other assistance (including the preparation of prototype plans of organization and operation) to organizations who meet the requirements which —

- A. express a desire to be designated as a PSRO; and
- B. the Secretary determines that the organization has a potential for meeting the requirements of a PSRO.

XIX. Exemptions of Christian Science Sanatoriums

Provisions of this part do not apply to the Christian Science sanatorium operated by the First Church of Christ, Scientist, Boston, Massachusetts.

53 Chadwick Street, Portland, Maine 04102



NATIONAL HEALTH INSURANCE AND BLUE SHIELD

Melvin R. Laird, Counsellor to the President for Domestic Affairs, and Charles C. Edwards, M.D., Assistant Secretary for Health, Department of Health, Education and Welfare, were among the speakers at the National Association of Blue Shield Plans 13th Annual Program Conference in Chicago. Mr. Laird told the 1973 conference participants that the Federal government is counting on Blue Shield to be the cornerstone of the new health care system designed to meet the challenges of the present and future. "Blue Shield has seven years experience with the government in providing healthcare coverage to a large segment of the nation's population under Medicare. We are ready for further partnership with the private healthcare prepayment industry under our proposed National Health Insurance Program," he declared.

In discussing the administration's recently introduced NHI proposal, the Presidential advisor explained that the administration's intent is to avoid change in healthcare that is "thrust upon it by revolution rather than rational reform."

The former Defense Secretary also said that he felt it was a mistake to use the Social Security Administration as the financing mechanism for National Health Insurance.

Outlining the Administration's proposal, Laird said the final version will include:

- A partnership with the private healthcare system
- will not cost \$80 million
- will not nationalize the system
- will assure comprehensive protection against the cost care
- will not have income or area barriers to participation
- will avoid over-utilization by providing better coverage at primary care levels,
- and will include mental health, drug and preventive care for children

"Blue Shield did not allow a gap to develop in medicine," stated the former Wisconsin Congressman. "Blue Shield first assured the public a means of paying for healthcare through private methods. In Medicare, your organization implemented an extremely complex program in a very short period of time and met a critical responsibility to the public."

In terms of NHI funding, Laird said he favors the use of general Federal funds. He further noted:

"We must look at the quantitative impact of increased Federal funding. We must also look at the qualitative aspects. We must eliminate the potential for personal gain from healthcare money and get those funds to the public in the form of benefits. We must have equity in the distribution of government funds."

In concluding, Laird told Blue Shield leaders, "If Blue Shield and the government act in full partnership, the needs of public health can be met."

Dr. Edwards' presentation drew a more up-to-date and detailed picture of the Nixon Administration's intentions concerning two important Federal healthcare measures — National Health Insurance (NHI) and Professional Standards Review Organizations (PSRO). Edwards said the major difference between the Administration's long-expected NHI proposal and the one submitted two years ago is that healthcare coverage will be identical for all segments of the population.

"No matter how premium costs are paid, no matter how the costs of deductibles and co-insurance are met, all beneficiaries will be entitled to the same coverage in the Administration's forthcoming proposal," according to Edwards.

"Furthermore, we are recommending a substantially broader benefit package than was contained in the earlier insurance proposal. Essentially, we are recommending unlimited coverage for hospitalization and physicians' services, and protection against catastrophic costs without any so-called lifetime ceiling on the amount of care covered by NHI," Edwards said.

Edwards also flatly denied that possibility of eliminating tax deductions for out-of-pocket health expenses. This earlier announced proposal "was merely one of many possible sources of additional revenue," and it has been rejected according to Edwards.

Referring to Blue Shield involvement in National Health Insurance, Edwards said, "those of us who have responsibility for the management of that system can and must do everything in our power to see to it that health resources are developed and that they are distributed in the most effective way."

"I believe very strongly . . . that we are on the verge of one of those rare and remarkable advances in the provision of healthcare, the kind that is usually associated with a major forward stride in funda-

mental scientific knowledge. Only this time, the advance is going to come in the way our whole health-care system operates."

In remarks designed to bring into sharper focus the implementation of recently enacted PSRO legislation, Edwards emphasized that "some individuals and organizations have mistakenly assumed that the figures contained in our guidelines represent absolute and inflexible limits, and that statewide organizations would be precluded from participation in the PSRO program. Neither of those assumptions is correct."

"We intend to enter into separate agreements with each local PSRO, and to make satisfactory arrangements with those state organizations that will be providing technical and administrative support to

local PSRO's," Edwards noted.

He also proposed three questions that "go to the heart" of the PSRO concept:

- can PSRO's improve the quality of health-care?
- can they help to bring about needed improvements in the way healthcare services are organized and delivered?
- can they make uniformly high quality of care the role, rather than the goal of PSRO's?

"The PSRO movement has been called the best hope for the continued independence of the Medical Profession and for medicine to bring about, through its own efforts, the kind of improvements in the quality of care that we all would agree are within our grasp," Edwards concluded.

News, Notes and Announcements

State of Maine

Department of Health and Welfare

Division of Child Health Clinic Schedule — 1974

Orthopedic Clinics

Bangor — St. Joseph Hospital

9:00 a.m.: Jan. 24, Feb. 28, Mar. 28, Apr. 25, May 23, June 27, July 25, Aug. 22, Sept. 26, Oct. 24, Nov. 28, Dec. 19

Fort Kent — Peoples Benevolent Hospital

9:00 a.m.: Mar. 12, May 14, July 9, Sept. 10, Nov. 5

Houlton — Houlton Regional Hospital

10:00 a.m.: Mar. 11, May 13, July 8, Sept. 9, Nov. 4

Lewiston — Central Maine General Hospital

9:00 a.m.: Feb. 15, Mar. 15, Apr. 19, May 17, June 21, July 19, Aug. 16, Sept. 20, Oct. 18, Nov. 15, Dec. 20

Presque Isle — A. R. Gould Memorial Hospital

9:00 a.m.: Mar. 13, May 15, July 10, Sept. 11, Nov. 6

Waterville — Thayer Hospital

Time scheduled by hospital: Feb. 4, Mar. 4, Apr. 1, May 6, June 3, Sept. 9, Oct. 7, Nov. 4, Dec. 2

Cardiac Clinics

Bangor — St. Joseph Hospital

9:00 a.m.: Feb. 8, Mar. 8, Apr. 12, May 10, June 14, July 12, Aug. 9, Sept. 13, Oct. 11, Nov. 8, Dec. 13

Portland — Maine Medical Center

9:00 a.m.: Jan. 25, Feb. 1, 8, 15, 22, Mar. 1, 8, 15, 22, 29, Apr. 5, 12, 19, 26, May 3, 10, 17, 24, 31, June 7, 14, 21, 28, July 5, 12, 19, 26, Aug. 2, 9, 16, 23, 30, Sept. 6, 13, 20, 27, Oct. 4, 11, 18, 25, Nov. 1, 8, 15, 29, Dec. 6, 13, 20, 27

Children's Development Clinics

Lewiston — Central Maine General Hospital

8:30 a.m.: Jan. 28, Feb. 11, 25, Mar. 11, 25, Apr. 8, 22, May 13, 20, June 10, 24, July 8, 22, Aug. 12, 26, Sept. 9, 23, Oct. 21, Nov. 25, Dec. 9, 23

Waterville — Thayer Hospital

8:30 a.m.: Jan. 30, Feb. 6, 20, Mar. 6, 20, Apr. 3, 17, May 1, 15, 29, June 5, 19, July 3, 17, 31, Aug. 7, 21, Sept. 4, 18, Oct. 2, 16, 30, Nov. 6, 20, Dec. 4, 18

Cystic Fibrosis Clinics

Lewiston — Central Maine General Hospital

Time scheduled by hospital: Feb. 1, Mar. 1, Apr. 5, May 3, June 7, July 5, Aug. 2, Sept. 6, Oct. 4, Nov. 1, Dec. 6

Portland — Maine Medical Center

Time scheduled by hospital: Feb. 19, Mar. 19, Apr. 16, May 21, June 18, July 16, Aug. 20, Sept. 17, Oct. 15, Nov. 19, Dec. 17

Bangor — St. Joseph Hospital

Time scheduled by hospital: Feb. 19, Mar. 19, Apr. 16, May 21, June 18, July 16, Aug. 20, Sept. 17, Oct. 15, Nov. 19, Dec. 17

Referrals Are Being Sought

Physicians are requested to refer the following types of patients to the National Cancer Institute for studies designed to evaluate the effect of chemotherapy and immunotherapy.

1. Patients with Malignant Melanoma with Stage III disease with clinical evidence of systemic involvement or regional draining lymph node metastasis. Patients must be seventy years of age or younger, must *not* have received prior chemotherapy within the preceding two months and must *not* have demonstrable central nervous systemic involvement. Patients with Stage II disease must have had a nodular type cutaneous primary lesion with histologic level four or five invasion.
2. Investigators would like to study patients with *breast cancer* from the time of "strong suspicion, and histologic proof to the termination of breast cancer." Physicians would be kept informed of each patient visit and no therapeutic change in management would be made without consultation and concurrence of both the referring physician and the patient. Of special interest are patients who have positive axillary nodes at surgery. This group of patients has a 45% five-year survival rate and they may be eligible for adjuvant chemotherapy programs.
3. Physicians are asked to refer patients with *multiple* basal cell carcinomas for therapeutic trials. Of special interest are patients with approximately a dozen or more basal cell carcinomas, including patients with the basal cell nevus syndrome.

Physicians interested in having their patients considered for admission to any of these studies may call or write to:

Stanley Beckerman, M.D.
Cancer Control Program
State of Maine
Department of Health and Welfare
Augusta, Maine 04330

County Society Notes

KENNEBEC

The Kennebec County Medical Association met at the Holiday Inn in Augusta, Maine on October 18, 1973. Members of the Woman's Auxiliary joined the Association members for a convivial social hour followed by a roast beef dinner. The President, Dr. Richard Dole, introduced Ms. Suzanne Culver, Auxiliary President, and called upon Dr. O'Connor to introduce his guests, Dr. and Mrs. Michael J. O'Halloran. Dr. O'Halloran, an oncologist, is Medical Director of St. Luke's Hospital, Dublin, Ireland.

After the Woman's Auxiliary members left to hold their meeting, Dr. Dole conducted the business meeting. The minutes of the previous meeting were accepted as read.

Two communications were read. A letter from Dr. Paul A. Fichtner, President of the Maine Medical Association, requested that a poll of the membership regarding fees for office and house calls and selected surgical procedures be conducted. The secretary commented that the questionnaire for this poll had been developed and would be distributed to the membership soon. A letter from Dr. Richard T. Chamberlin, Executive Committee member from our Association, called attention to a number of topics which will be considered at the next meeting of the Maine Medical Association House of Delegates. Consideration and expression of opinion by the members was urged.

The following new members were elected: Drs. Ralph G. Bennett, H. Wayne Tobin, Teodoro Dela Cruz, Jr. and Dou Kyung Chai. Three physicians were proposed for membership. They are Drs. David R. Ginder, Alfred Hurwitz and Joseph F. Martinak.

Dr. Dole then introduced the main speaker of the evening, Dr. Charles Kahn, from the Joslin Clinic. In his talk, "Why Treat the Asymptomatic Diabetic Patient," Dr. Kahn persuasively developed his thesis that, although diabetes may be genetically determined, the angiopathic and neuropathic consequences of this metabolic disorder are the result of prolonged insufficient insulin activity rather than co-genetic disorders. A lively discussion period followed Dr. Kahn's interesting presentation.

The meeting adjourned at 9:50 p.m.

The Kennebec County Medical Association met at the Silent Woman Restaurant in Waterville, Maine on Thursday, November 15, 1973. Following a social hour and enjoyable dinner, the President, Dr. Richard R. Dole, conducted a lively business meeting.

The minutes of the previous meeting were accepted as read.

Under old business, Dr. Richard T. Chamberlin reported on the recommendation of the Maternal and Child Welfare Committee that the Maine Medical Association support the legislative proposal that minors may receive medical treatment without parental consent. After considerable discussion, Dr. Charles E. Towne moved that the recommendation be accepted. Dr. Irving I. Goodof seconded the motion and it was so voted. The need for more advance information about matters to be discussed at the business meeting was pointed out by a number of members.

Under new business, Dr. Dole named a Nominating Committee to submit its report at the December meeting. The committee consists of Drs. Richard H. Dennis, Chairman; Brinton T. Darlington and Francis A. Spellman.

New members elected were the following: Drs. David Ginder, Alfred Hurwitz and Joseph Martinak.

Dr. Robert L. Shelton then called to the attention of the Association an item in the Union Mutual Newsletter which proposed that the Explanation of Medical Benefits (EOMB) would no longer be issued. This allegedly would save the fiscal intermediary money, but since the EOMB is necessary in order for physicians to submit claims to other third party payers, it would create additional paperwork and possible confusion — the exact cost of which has not been estimated. The members of the Association

were strongly urged to make their individual disapproval of this proposal known to Mr. Long of Union Mutual.

Dr. Chamberlin then made a strong plea for more time at the County Association meetings to discuss business matters.

The speaker of the evening, Dr. Ephraim Friedman, was introduced by the secretary. Dr. Friedman, Dean of the Boston University Medical School, gave a stimulating talk on "Current Trends in Medical Education."

The meeting was adjourned at 9:40 p.m.

KEVIN HILL, M.D., *Secretary*

WASHINGTON

A regular meeting of the Washington County Medical Society was held on October 29, 1973 at the Medical Staff Lounge, Down East Community Hospital, Machias, Maine with nine members and guests present.

The meeting opened under the direction of Dr. G. Bernard Shaw of Machias. Dr. Rowland B. French of Eastport said that he had been appointed chairman for the Washington County Diabetic Week, November 11-17. Dr. French stated that he would like to have a sub-chairman for each section of the county, including Calais, Eastport, Lubec, Machias and Milbridge, with physicians in each section to supervise urine tests. Various pharmacists were contacted and apparently most of them either have the dry-pak urine testing set or anticipate receiving them in the near future. It was thought that this year, publicity in the papers and over the radio would state that people could go to their various pharmacies and pick up dry-paks and then check their own urine; about 1-2 hours after a heavy meal and then send the dry-pak either back to the drug store or to a central collecting agency.

Dr. G. Bernard Shaw brought in an advertisement, advertising "ear piercing" in a jewelry store by an R.N. It was the general feeling this went beyond the usual bounds and that we should so notify Dr. Daniel Hanley.

Dr. Robert G. MacBride, Lubec, was appointed delegate to the Maine Medical Association. Dr. Donald M. Robertson, Milbridge, was appointed alternate delegate. Dr. John Kazutow, Columbia Falls, stated that he would be willing to serve on the Insurance Committee and Dr. James C. Bates, Eastport, said that he would be willing to serve on the Hospital Association Liaison Committee. Dr. James C. Bates felt that the present method of nominating two men for President of the Association, then voting on them at the annual meeting sometimes caused ill feelings. He felt the old method of having one man nominated, then if they wished further nominations, it could be done from the floor during the meetings.

Dr. Foster Vibber of Jonesport stated that the medical society meetings should again go back to having clinical sessions as well as business meetings. This provoked considerable discussion with members generally favoring some type of clinical meeting, but felt that they should be alternated, since so much business is generated, that it is very difficult to have a clinical meeting and a business meeting both the same evening.

Dr. Donald M. Robertson, Milbridge, stated that the members of the Medical Staff of the Down East Community Hospital, Machias, had set up a loosely organized group called the Down East Clinical Associates, which would have central billing, central purchasing and other labor saving devices which would be helpful; hoped also to attract younger doctors on a salary basis, if necessary.

The Down East Clinical Associates and the Lubec Regional Medical Center have set up what is called the "Washington County Health Plan," which will develop prepaid plans for medical care and other groups within a service area. The doctors from the Down East Community Hospital have also applied to the Johnson Foundation for a grant to train up to eight students on a year-round basis with the main emphasis to be on rural health

practice. The training would be by the local physicians, plus aid from consultants that at present are making periodic visits to the local hospital. A pediatric nurse associate is expected to set up pediatric clinics to work partially under supervision of the Down East Clinical Associates, with the help of regional medical planning and under approval of the Washington County Health Council. It is hoped that a county-wide communications set-up can be made with base stations for example in the Down East Community Hospital, Machias, with each doctor and each ambulance and each regional center as sub-stations.

Dr. G. Bernard Shaw stated that at the Executive Committee meeting August 1973 of the Maine Medical Association, there was some discussion on PSRO. Dr. Shaw said that we should back any plan that had control of this by the physicians, not by any insurance or similar group.

The next meeting will be on November 26, 1973 at Eastport, Maine.

KARL V. LARSON, M.D., *Secretary*

PENOBSCOT

The October meeting of the Penobscot County Medical Society was held at the Pilot's Grill in Bangor, Maine on October 16, 1973, with 28 members in attendance. The President, Dr. Dexter J. Clough, 2nd, opened and presided over the business portion of the meeting. The minutes of the annual meeting held in May 1973 were presented and approved as read. There were two announcements presented to the membership. The first announcement was in regard to the standing and special committees of the Maine Medical Association. Dr. George W. Wood, III, read the list of the standing committees and commented briefly upon each one of them. It was asked that if any member was interested in serving on one or more of these committees to make this known so that his name might be submitted to the State office. Secondly, it was announced that the County Society had received a request from the President, Dr. Paul A. Fichtner of the Maine Medical Association for information regarding fee schedules in present usage within our county area. His request was in response to a resolution passed by the House of Delegates of the Maine Medical Association that the State Association should seek a uniform fee schedule for the State of Maine.

A resolution on the death of Dr. Harry Butler was presented by Dr. Walter L. H. Hall. In addition, a resolution on the death of Dr. Clement S. Dwyer was presented by Dr. Warren G. Strout.

There were seven applications for membership in the County and State Society which were approved by the Executive Council and were submitted to the membership for their consideration. The applications of Drs. James R. Curtis, William E. Clark, Jr., Thomas Belleau, Frank C. Chapman, Pundalik P. Pai, Terence O'Callaghan and Anthony M. Kurland were presented. All applications were approved by the membership.

Elections of delegates and alternate delegates to the House of Delegates for the Maine Medical Association were then held. Those voted as delegates include Drs. Robert P. Andrews, William M. Blackwell, John S. Houlihan, John J. Pearson and David M. Sensenig. Those voted to serve as alternate delegates include Drs. Franklin E. Bragg, II, Philip R. Kimball, Francis I. Kirtledge, Jack N. Meltzer and John A. Woodcock.

A motion was made, seconded, and passed to approve the dues for 1973-74, and that the coming year's dues would include the cost of meals for the monthly meetings of the County Society. The dues structure for 1973-74 had been reviewed and approved by the Executive Council.

Dr. Benjamin L. Shapero introduced the speaker for the evening, Dr. Martin Bell, a Pediatric Surgeon from the Maine Medical Center, Portland, Maine. The topic of his discussion was entitled the Non-Surgical Care and Preparation of a Pediatric Surgical Patient. Dr. Bell presented a most educational and informative discussion which included the care of the seriously ill newborn or infant and how the pediatric intensive care unit at the Maine Medical Center serves the needs of the State of Maine in the field of intensive pediatric care.

Following the presentation of Dr. Bell, the meeting was adjourned.

PHILIP G. HUNTER, M.D., *Secretary*

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Improving the Quality of Medical Care — A Very Mixed Bag*

RICHARD T. CHAMBERLIN, M.D.

INTRODUCTION

The ultimate goal of all people in the health care industry is often stated to be to improve the quality of medical care. One rarely hears an opposing opinion, for to do so would be to question all that is sacred.

Many busy practicing physicians, harried hospital administrators, and concerned trustees have recently been impressed that something new is happening in the field of evaluation and measuring the quality of medical care. While it is true there is newly acquired interest in the problem, partly stimulated by recent federal legislation, it is the thesis of this paper that the basic philosophy behind the review of the quality of medical care and many of the methods available are well established and have been tested over the years by those who have been bold enough to do so. There is danger that this perspective of time will be lost. The threat of regulatory agencies may so color our minds as to do irreparable harm to mechanisms which do hold great promise of improving the care rendered to patients. The threat may also render ineffective methods which may assist in solving some of the problems of continuing medical education. Therefore, the major purposes of this paper include an attempt to put the field of evaluating the quality of medical care into proper perspective, to describe some of the methods which are available, and to relate these to recent federal legislation.

ASSUMPTIONS AND DEFINITIONS

Assumption

William C. Felch, M.D., President of the Amer-

ican Society of Internal Medicine, has pointed out that if we *do* accept the assumption that our goal is to improve the quality of medical care, we have accepted some interesting interrelationships between activities which are common in our modern medical vocabulary. To *improve* implies that a change will be made. Whenever one is in the process of making a change, one must have a way of measuring where one is at the beginning and where one is after the change has been made, otherwise it would be impossible to know if, in truth, the change had been made and, in this case, whether improvement had occurred. This process of measuring medical care is really what peer review is all about.

Once measured, or monitored, one must have a mechanism to learn those things which are necessary in order to accomplish or make the improvements which are indicated. Such a learning process is really what continuing medical education is all about.

Unfortunately, as Dr. Felch points out, once medical care has been measured, and once new knowledge has been taught, the most difficult matter of all is actually making the changes which are indicated.¹ One might continue Dr. Felch's reasoning to add that it is that very failure to make indicated changes which has perhaps been one of the motivating forces behind some of the legislative mandates and regulations facing the medical profession today.

Definitions

It is important to agree upon some basic definitions contained in the assumption. Let us state the assumption again and focus on some of these definitions. The assumption: the goal of all health care professionals is to improve the *quality of medical care*. The implications of the word improve are dis-

*Presented at Hospital Financial Management Association Institute, Williamsburg, Virginia, November 7-9, 1973.

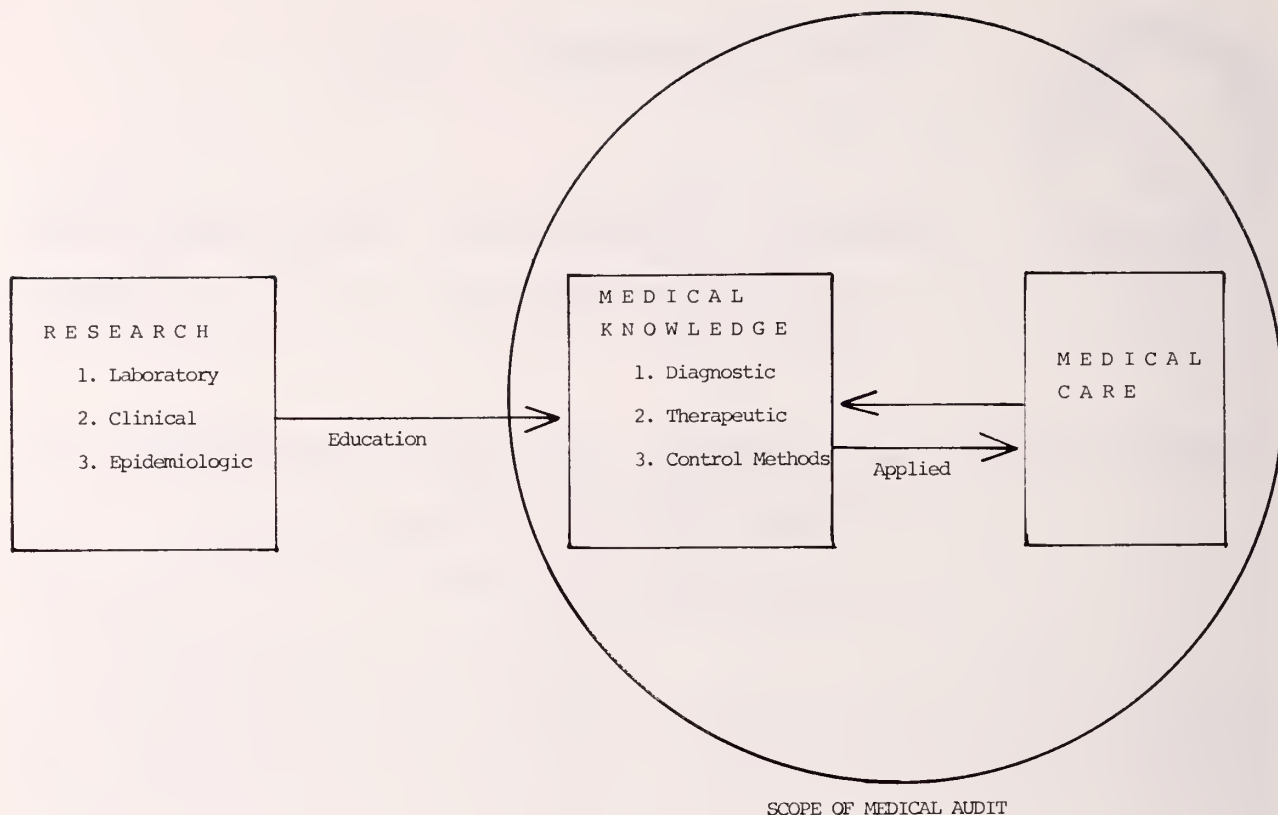


Fig. 1³

cussed above. How does one define quality and medical care?

The definition of a word such as quality is difficult at best. This difficulty is compounded when the definition extends to the phrase quality medical care. There is a definition which, although complex, includes most of the elements that practicing physicians might feel comfortable with. One definition by Dr. R. Reinfrank of the American Society of Internal Medicine states, "... quality medical care includes the correct diagnosis — medical, psychological, and social — arrived at by a disciplined and logical process of clinical thinking and judgement — resulting in the application of any or all treatment maneuvers available at that point in time — in an effort to restore the patient to an optimum degree of health." If one adds to that the concept of health as promulgated by the World Health Organization — health is complete mental, physical, and social health — not just the absence of disease, one has an all encompassing definition.

Other definitions of quality as it applies to medical care have included such statements as —

"... high quality is characterized by the degree to which preventable deaths, preventable functional impairment, and preventable suffering are minimized over time."²

"... quality medical care is that which has the characteristics of excellence."

Consumer groups have defined quality as that which is available.

The next important definition or concept is, of what does medical care actually consist. What is this thing that is to have the characteristics of excellence? One common model is that of Virgil Slee, M.D., who is the Director of the Commission on Professional and Hospital Activities in Ann Arbor, Michigan.³ This concept is diagrammed in Fig. 1. In this schema, medical practice is seen to consist of three basic elements — (1) research, (2) medical knowledge, and (3) medical care. Research provides the basic raw tested data, laboratory, clinical, and epidemiologic which is taught in the education curriculum of medical schools. The student assimilates this material in the educational process and part of it becomes his own fund of medical knowledge. The physician-student applies this basic knowledge in the care of his patients and this process is medical care. Even as the physician does this, a change occurs in his patients and the physician's observations of this change becomes new knowledge which is added to his own basic fund of medical knowledge. This feedback loop is important as we shall see later as it pertains to the problems of continuing medical education.

Fig. 1 introduces still another term to our medical vocabulary — medical audit. The scope of the word medical audit is seen in the diagram and encompasses

ses all of an individual's medical knowledge and the way he uses that knowledge in the process of medical care. Stated in another way, medical audit is the process by which medical care rendered is matched against standards. In the diagram, the standards referred to would be represented by the fund of knowledge a physician has. Since matching the care actually rendered to standards is difficult to do on a concurrent basis, most definitions of the term medical audit add that it is the matching of care given against standards as documented in the medical record.⁴

More recently, peer review has become a household word. There are many definitions to choose from. The American Medical Association adopted the following definition. Peer review is the evaluation by practicing physicians of the quality and efficiency of services ordered or performed by other practicing physicians. It is an all inclusive term for medical review efforts.⁵

Legal Precedents – A Motivating Force?

While considering basic definitions of such words as quality of medical care, it is perhaps helpful to recall two important legal decisions which have provided some of the renewed interest in the problem of measuring quality.

The "locality rule." Massachusetts courts established in 1880 the principle that physicians should be judged against standards which existed in the communities in which they practiced. In 1968, while considering a new case, the Massachusetts Supreme Court overturned its original principle stating that in the modern age of transportation, communication and medical education, distinctions based on geography were no longer valid. Thus, in a sense, all physicians no matter where located are the peers of all other physicians and the same standards shall apply to all.⁶

The "Darling Case." The Illinois courts, in 1965, established the often cited role of institutional responsibility for the quality of care rendered by personnel working in this institution. In an analysis of the case involved in which an eighteen-year-old college student had to have an amputation of a leg which he fractured while playing football, due to complications which occurred in the hospital, the usual legal responsibilities for employees' acts is seen. However, the case also pointed out the institutional responsibility to insure that the care rendered within the institution is of quality. That means that the institution must oversee some mechanism that the medical and health care delivered on its premises is, in fact, of a measurable quality. Since all institutional responsibility rests in the hands of the Board of Trustees, this case for the first time pointed out a new relationship of the Board of Trustees as they relate to the medical care practices by physicians on hospital staffs.⁷

Where do these forces stand in perspective of measuring the quality of medical care? Are they pertinent to or motivations for activity in the field of assessing quality care?

METHODS OF MEASURING QUALITY OF MEDICAL CARE AND THEIR HISTORY

The purposes of this paper do not demand an exhaustive study of the development of quality care measurement. However, as mentioned in the introduction of the paper, the development of measurements of quality care should be put into proper perspective by recalling some of the early work done in the field such as that by Codman in 1914⁸ and Ponton in 1928.⁹ Codman, in fact, has been credited with performing the first surgical audit.¹⁰ What have we learned in the past sixty years about methods of evaluating medical care?

There are three basic methods now available for such evaluation. (1) Structure or in-put measurement. (2) Process measurement. (3) Outcome measurement. Let us look briefly, and albeit somewhat superficially, at each of these methods.

Structure Or In-Put Method

This method might be paraphrased as "the certificate on the wall method." For the individual health care professional, it represents the diploma from medical school, the medical license itself, usually obtained directly or indirectly following the passage of examination, the specialty board certificate, etc. For the institution, it is the accreditation by the Joint Commission of Accreditation of Hospitals, a state hospital license, etc. The assumption here is that if an individual or an institution has met the requirements necessary to obtain such certificates or licenses, that very fact means higher quality medical care than that rendered by individuals and/or hospitals who do not have these credentials. Is that assumption correct?

There have been studies both on an institutional and on an individual level to suggest that the assumption is correct. One study compared medical process items as recorded in the hospital charts of discharged patients from Thayer Hospital in Waterville, Maine, with similar items in the records from the Community Service of the Yale-New Haven Medical Center. There were statistically significant differences in the level of quality of care rendered, with the higher quality seen in the patients at the Yale-New Haven Community Service. The study also identified a higher level of care rendered to patients by physicians who had their specialty board certifications as compared to those nonspecialist counterparts.¹¹

On the other hand, many studies show either no correlation or very weak correlation between in-put or structure measurements and quality. Peterson found weak correlation between the length of a phy-

CRITERIA FOR BRONCHITIS, ACUTE BRONCHITIS,
LARYNGO-TRACHEITIS, AND ACUTE UPPER
RESPIRATORY INFECTION

(I.C.D.A. No. 501, 500, 474, and 475)

(Medical Panel)

In absence of complicating illnesses listed below, *acute bronchitis in itself is not an indication* for hospitalization.

Indications for Admission:

1. Diagnosis of epiglottitis made clinically
2. Dehydration requiring parenteral fluids
3. Evidence of respiratory embarrassment
 - a. Stridor
 - b. Cyanosis
 - c. Tachypnea
4. Chemical or thermal injury with laryngeal edema or pulmonary edema or impending onset of either
5. Chronic disease present, such as:
 - a. Heart disease
 - b. Diabetes mellitus
 - c. Chronic lung disease with impaired pulmonary reserve (emphysema, chronic bronchitis, bronchiectasis, etc.)
 - d. Chronic renal disease
 - e. Malignancy or debility
6. Failure to respond to therapy as an outpatient is not an indication for admission unless the *above indications* are present

Services Recommended:

1. History and Physical Examination: Specific reference to complicating disease
2. Laboratory:
 - a. C.B.C.
 - b. Urinalysis
 - c. Chest roentgenogram at admission
 - d. Sputum smear and stain
 - e. Throat culture or sputum culture is strongly urged
2. Laboratory Consistent with Diagnosis:
 - a. Inhalation therapy
 - b. Antibiotics or chemotherapy

Probable Length of Stay: Undetermined

Indications for Discharge:

1. The complications requiring admission have been satisfactorily controlled
2. Afebrile for 24-48 hours

Fig. 2¹³

sician's hospital training and high quality medical care.¹²

Process Measurements

This method involves the comparison of actual items of care rendered to patients with lists of items considered to be appropriate for that diagnosis or type of patient. The items may include points of history-taking physical examination findings, laboratory and x-ray procedures, and treatment maneuvers. The lists of processes may be quite long and all inclusive or may be shortened to what are called "critical" processes without which all people would agree harm may come to the patient. An example of process measurements is seen in Fig. 2. The question may be raised again, is there any evidence to show that medical care, which includes all the items on such a process criteria list, is any better than care

rendered to a patient with the same diagnosis but which includes only fifty percent of the process items? Forty percent? Ten percent? Brook studied this question in several ways and found (a) 23.3% of the cases studied by analysis of process alone had adequate care as judged by two out of three judges, and (b) only 1.3% of the cases studied met all of the process criteria statements considered necessary by both generalists and specialists.¹⁴ Brook also studied outcome measures (see below) and concluded that the results of a study of the quality of medical care will vary somewhat depending upon the methods used to do the study, and that the most valid method to date is individual case analysis of both medical care process and patient outcome. This need to relate process criteria to outcomes was also a prime recommendation of the American Society of Internal Medicine's study of quality in the office setting.¹⁵

Outcome Measures

These measures may be applied either to a study of individual outcomes or to a study of group outcomes. They include such measures of the mortality rates of groups of patients with identical diagnoses, as well as the functional level of a given patient at a certain point in time, after he has received treatment. This area of study is of greatest interest at the moment as few studies have been done in this field. Methodologic problems exist in our usual medical care system for doing outcome studies. How would one trace each patient who had treatment for acute myocardial infarction as an in-patient to learn their functional capacities six months after hospitalization, given the varied nature of our present health care system? More recently, the Joint Commission on Accreditation of Hospitals TAP Institutes have been teaching a method of retrospective audit which is an intermediate outcome method.¹⁶

Combinations

Ideally, it would be helpful if one could identify that the care rendered, for example, to a coronary patient by a board certified cardiologist in a Joint Commission of Accreditation approved hospital which has a Coronary Care Unit (in-patient measures) and following a coronary care unit protocol (process criteria) is or is not different in very definable ways in terms of outcome from the care rendered a similar patient by a generalist in a regular acute care bed.

Also, it is difficult to study the doctor's logic as he cared for the patient by any of the methods detailed above. This is so important, for unless we improve our ability to define and study the elements which exist in a physician's clinical judgement, we shall never really understand how some physicians seem to be able to do well in terms of outcomes of care while seemingly ignoring certain processes of care which are considered by others to be so important.

The problem oriented system of Dr. Lawrence Weed comes close to providing a methodology whereby one can trace a physician's logic, reasoning, and at times "guesswork." It would be by such a system that one ought to be given an insight as to why physicians omit and/or add to medical processes of care in given cases. Also, since the system is carried from one site of medical care to the next, a better method of follow-up of outcomes of care ought to be available.^{17,18} Again, the recent study by the American Society of Internal Medicine done in the office setting strengthens this concept.¹⁵

THE BLACK BOX

Regardless of the type of evaluation of quality medical care one chooses, the problems of gathering indicated data present themselves sooner or later. These issues have by themselves caused a great deal of controversy, much of this either premature or misunderstood. The problems may be divided broadly into several categories. (1) The problem of physicians recording data. (a) The "semantic problems." (b) The coding problems. (2) The problem of confidentiality. (3) The problem of display of data.

The problems relating to the physicians recording of data begin with a lack of physician acceptance of one of the basic definitions we have already discussed. Medical audit was defined as matching the care rendered against standards as recorded in the medical record. Many physicians still do not feel that their primary responsibility to their patient includes the documentation in the patient's record of a detailed account of the care rendered. Their answer frequently is — "I take care of the patient, not the medical record." There is no easy answer to this dilemma. Unless a physician accepts the premise that part of his responsibility to his patient includes the acceptance of peer review and its methods, there is no simple way of assuring accurate record keeping habits by the practicing physician. On the other hand, it is certainly a truism that the physician is currently inundated by paperwork and many have had to hire additional staff to their office just to handle this paperwork.

Even if physicians accept the premise that peer review of care as depicted in a record is acceptable and part of his responsibility, the semantic problem arises. We do not all speak the same language. It has been said that there are twenty-four thousand terms including ten thousand synonyms and eponyms for an estimated thirty-seven hundred to thirty-eight hundred specific diagnoses. There are one hundred and fifty thousand descriptors or symbols where twenty thousand should be sufficient.¹⁹

This problem is compounded by the related problem of coding. Not all automated data processing services use the same coding system. Thus, ICDA-8, for instance, is used in approximately forty-four to forty-five hospitals in Maine who prescribe to one

data service while six other hospitals in Maine use HICDA coding which is required by their data service. While it is possible to convert data from one system to be compatible with the data of another system, this conversion is time-consuming and adds to the expense of data processing.

The problem of confidentiality of data has not been satisfactorily answered, and in some minds there is question if, in truth, there can ever be a satisfactory answer. If one looks at data in an aggregate way, one can easily protect the confidentiality of the individual physician or patient and simply report the studies by case numbers and doctors' code numbers. On the other hand, if data is to be useful in an educational sense, one needs to know about the specific patient who is "shopping around" for a physician who will give him the opinion he wants to hear, or one also needs to know which physician is still treating pneumococcal pneumonia with molasses and sulphur.

On a practical note, much of the answer to the confidentiality issue rests in the hands of statutes of the states involved.²⁰ This should not be considered a problem peculiar to medicine, however, as the reviews of Sawyer and Schechter in relation to centralized data banks indicate.²¹

As critical as the problems noted above are to the acceptance and understanding of data by practicing physicians, frequently a new problem occurs when valid data is displayed in an ineffectual and inappropriate way. Frequently, the incidence of a disease per one thousand population, or the admission rate of a certain disease per one thousand population base, or the length of stay per diagnosis is listed in rank of highest to lowest or lowest to highest as the case may be. Frequently, these lists are made with the averages or means stated in such a way as to imply wrongdoing on somebody's part. To be effective, norms should be just that — that is, statistical statements of incidence with absolutely no judgment — stated or implied — that care is or is not quality care based on such statistics. Only after a peer group has validated and accepted such norms as acceptable standards, can one then make judgments related to those who do not meet those standards.

THE REAL WORLD OF 1973

The many issues involved in measuring the quality of medical care have been brought into increasingly sharp focus in recent months and years. The medical profession has been inundated by a number of programs whose names and titles lend themselves to a barrage of initials. Thus, we have CHAP, QAP, PAS-MAP, HUP, HIP, CAP, HASP, EMCRO, etc. These programs have been briefly summarized in Chart 1. Again, the purposes of this communication do not allow for even a brief description of these programs more than is contained in the accompany-

<i>Name & Initials</i>	<i>Orientation</i>	<i>Reviewers</i>	<i>Admissions Review</i>	<i>Data Used L.O.S.</i>	<i>Comments</i>
Certified Hospital Admission Program CHAP	—Precertification —Concurrent LOS Monitoring in Hospital	—Nurse Coordinators —Physician Advisors —Specialty Consultants	— <i>Elective</i> Preadmission Criteria — <i>Emergency</i> Within 24 hrs.	PAS LOS Data Used	—All screens determined by physician committee in advance. —Nurse may grant extension of stay based on data in record — Nurse may not reduce stay without M.D. agreement. —No retrospective denial. —Medical Care Foundation, Sacramento County Medical Society.
Hospital Admission Precertification HAPP					—Identical to CHAP except program uses the hospitals' own U.R. Committee and nurses employed by the hospital instead of employed by the program. —New Mexico Foundation for Medical Care.
On Site Concurrent Hospital U.R. OSCHUR	—In-Hospital —Concurrent —LOS & Quality	—Nurse Coordinator —Medical Advisor	—Within 24 hrs. of Admission	Developed by Committee	—Same as under CHAP as per above. —Utah Professional Review Organization.
Foundation for Health Care Evaluation Minneapolis	—Discharge Review using L.O.S. Guides	—U.R. Secretary —Reviewing Physician	—On Timely Basis After Admission	75th Percentile of Regional Data	—Utilizes Chiefs of Service if controversy develops between reviewer and attending.
Utilization Review Plan of the AHA Quality Assurance Program QAP	—Precertification —Discharge Review Based on LOS	—U.R. Committee —U.R. Coordinator Employed by Hospital	— <i>Elective</i> Preadmission Criteria Screen — <i>Emergency</i> Within 24 hrs.	PAS 50th-70th Percentile as a Range	—Much as with CHAP re extensions and denials except hospital U.R. Committee does it. —Reports to Board of Trustees.
Hosp. Adm. & Surveillance Program HASP	—Precertification —Discharge Review Based on LOS	—Coordinator (non M.D.) —Physician Advisor	— <i>Elective</i> Preadm. LOS Criteria — <i>Emergency</i> 1 working day	PAS 50th Percentile	—Requests for extensions — via regional representative of HASP.

ing chart. Suffice it to say that each of these programs and the others which exist involve in some way the elements of measurement of quality of care noted above — structure, process, or outcome. Methodology and coding systems may vary but all have one thing in common — an attempt to measure the quality of medical care for certain very express purposes.

Perhaps the most controversial of all programs is that known as the Professional Standards Review Organization (PSRO). As the Congress of the United States debated a bill, then known as the Social Security Amendments of 1971 (HR-1), Senator Wallace Bennett introduced his now famous "Bennett Amendment" in August 1970. After much debate and some modification by a Joint House-Senate Committee, the Bennett Amend-

ment became part of Public Law 92-603 signed on 10/30/72 by President Nixon. Specifically, this section of the law is known as Title XI, Section 249-F, Public Law 92-603. In spite of being relatively new, there has been already an excellent book written on the provisions of this part of the legislation.²²

As with most federal legislation, there has been a great deal of misunderstanding, misinterpretation, and misleading advice with respect to this piece of legislation. The scope of this paper does not permit an exhaustive description or analysis of the law. The concern of those who are familiar with the history of the developments in continuing medical education and of peer review as an educational necessity is that the opposition to this legislation may, in truth, shatter some of the basic principles on which good continuing education methodology rests.

Earlier in this paper, attention was paid to some very specific basic definitions. Recent criticisms of PSRO legislation leads one to conclude that there is a lack of understanding of some still further definitions contained within the law. These will be discussed briefly here.

Norms

Norms are empiric measurements of performance.²³ No one adopts or sets norms. Each and every physician who practices medicine contributes to the development of norms by the care he renders to his patients. The PSRO legislation specifies simply that these empiric measurements of performance will be used in the methodology of the review process. A common example of a norm is a length of stay figure for a specific diagnosis. This length of stay number may be modified or refined by making it age specific and/or regionally specific. On the other hand, if a given local review organization can demonstrate that a specific norm such as a length of stay has significant variables as detailed by objective studies,²⁴ the local review group has all that is needed to support a variation in that norm for the group of patients in that locale.

Criteria

Criteria are specific elements of medical care considered appropriate or relevant to each diagnosis or condition. Again, there is no specific reference in the PSRO legislation that defines the limits of such criteria. A local group may adopt as many or as few criteria as it may deem necessary in any particular diagnostic group. The omission of any element in the criteria list has no judgemental implications. Quite the opposite. The inclusion of an element of care on a process criteria list has far greater meaning in terms of quality of care than does the exclusion of an element from such a list.²⁵

Standards

This term relates to the desired level of compliance with a given set of criteria. For example, if a disease category has twelve criteria items which are considered appropriate and relevant to the care of that group of patients, a local PSRO may decide that its standard is a compliance of ninety percent of that particular list. Here again, even if a national PSRO Council establishes criteria — the local group may still adopt a standard which expresses the degree to which physicians in that area shall be in compliance with those criteria.²⁶

The debate over PSRO shall probably continue for months if not years. Senator Bennett recently criticized the most vocal opponents to PSRO trying to clarify what he also feels are basic misunderstandings and misinterpretations of just such terms as discussed in this paper: norms, standards, criteria, data, data banks, computerization, and so

forth. He points out that a main thrust of his amendment was, “. . . to . . . replace this existing unprofessional system (of review by government employees and insurance company representatives) with a publicly accountable mechanism by means of which only physicians could undertake the review of medical care on a case-by-case basis and do this without being second-guessed by lay bureaucrats.”²⁷ Physicians on the other hand feel that Senator Bennett and the Congress had another major purpose in passing the legislation as witnessed in the following quotation from the Senator’s speech before the Senate on 10/13/70. “My amendment to establish professional standards review organizations was intended as a responsible effort to establish a comprehensive common sense means of slowing down — perhaps even stopping — that taxpayer’s treadmill.” (treadmill = financing Medicare and Medicaid)²⁸ The unanswered issue seems to be, is it possible to develop a review mechanism which controls costs of care on the one hand, while assuring quality in a fairly well-defined way on the other?

Relationship To Continuing Medical Education

One of the best descriptive models of continuing medical education is that developed by Dr. Clement Brown.²⁹ This model which relates the patient care cycle to that of continuing medical education could very well provide the medical profession with a reliable chart to use while navigating the troubled waters of quality medical care. (see Fig. 3).

The cycles begin as they should with the patient who gives information (data) to his physician. The physician records this data (or should) in some fashion which could very well be in a problem oriented medical record. The many records involved in a physician’s office or in a hospital could (but don’t have to be) abstracted so that rapid computer storage and retrieval would be possible. It is possible that none of the above makes any difference unless a group of physicians have decided in advance that it is their responsibility to their patients to participate in a meaningful peer review process. Such a group of physicians would obviously set priorities rather than study all of the medical care all at once and would assume that they might want to evaluate themselves in those areas which either were most frequent in their practices or perhaps if not frequent might be areas which, if improved, might help their patients the most.

Once priorities were established, the group might well want to decide for themselves what is acceptable practice in that particular category, and, once decided, wouldn’t it be interesting to see just how well they did as a group in that particular category of patients by analyzing the data gathered by their computer, from their records, on their patients? Obviously they aren’t sophisticated or rich enough to

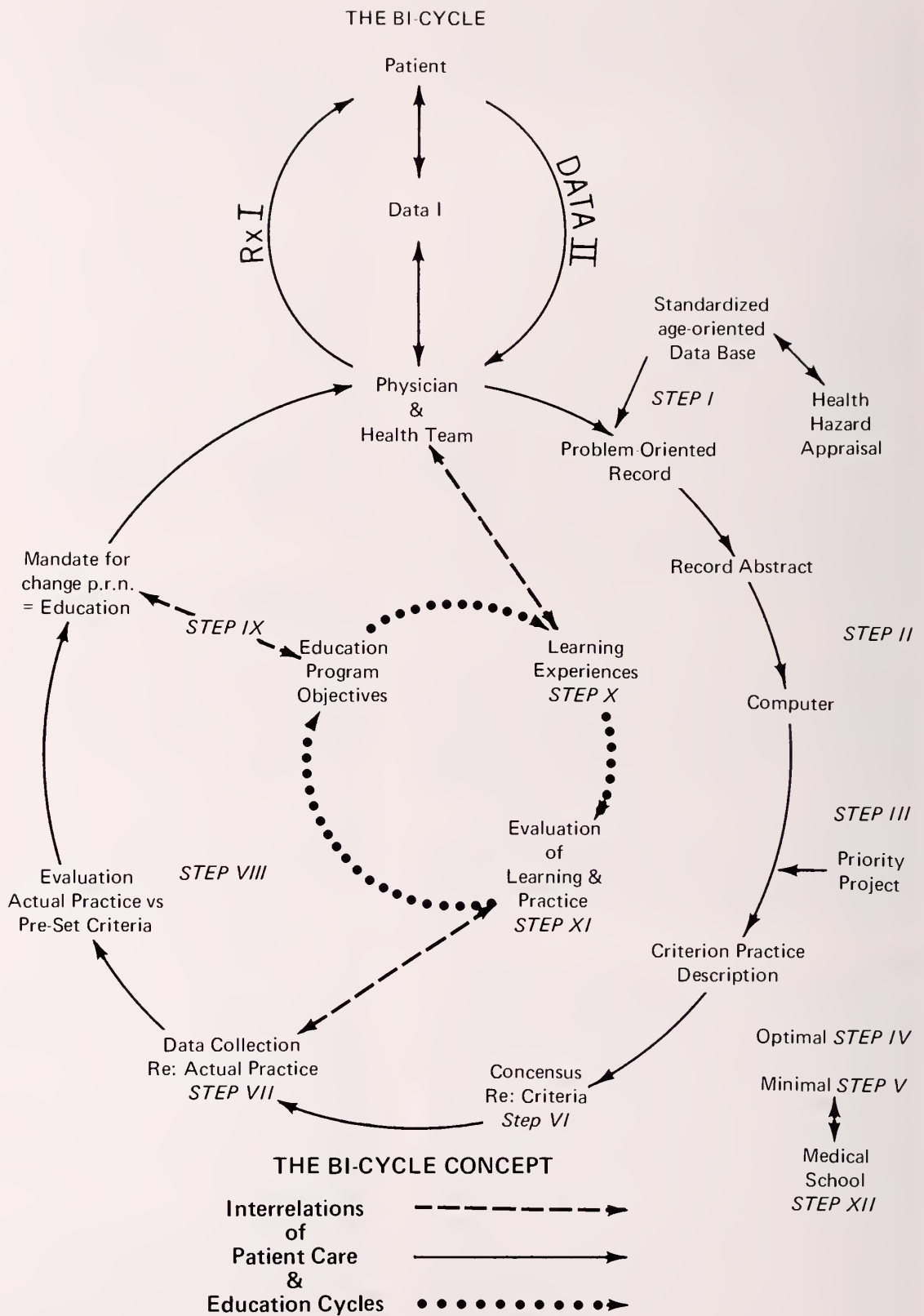


Fig. 3²⁹

have their own computer, so they either are going to have to spend hours reading old records or they are going to have to hire someone else's computer to make the job easier for them.

Now comes the exciting part. The evaluation or analysis of their own actual practice reveals that they are not quite meeting their own expectations in patient care. Why? Is it a lack of new knowledge? Is it a poor understanding of old knowledge? Is it because they have yielded to the cost conscious administrator? Let us develop some educational objectives to use in our up to now sometimes boring continuing medical educational programs. Let us further develop some exciting learning experiences designed to meet those specific objectives. Let us apply the results of all of this process to the care of our patients — and most important of all, let us *observe* the *change* in our patients. If we have failed to accomplish our objectives in an educational sense, the next time we review that priority item, there will be no *improvement in medical care* as judged by our own *criteria and standards*.

The educational model described by Dr. Brown has been successfully tested in the real world of 1973. Many aspects of it lay directly behind some of the more successful attempts being made to improve the quality of medical care reviewed in this paper. It is important to note in addition, that it and the general problem area of measuring the quality of medical care both are being offered in some medical school curricula.^{30,31} The medical profession must ask itself — do we have to wait until today's students become tomorrow's practitioners to demonstrate to the American Public the profession's active concern about its goal — to improve the quality of medical care?

CONCLUSION

This paper has attempted to put the problem of improving the quality of medical care into perspective. Even though structure, process, and outcome methods of measuring the quality of medical care have long been developed and tested, the medical profession seems motivated to turn a deaf ear to the possibilities these methods offer in the process of learning how to improve medical care. Perhaps this is simply because the Congress of the United States has seen fit to intervene by the passage of legislation called PSRO. The paper makes a plea to the profession to study the basic principles of continuing medical education as they relate not only to the quality of patient care, but also to the basic provisions in the PSRO legislation.

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Continued on Page 31

Impedance Audiometry in Office Practice

LORING W. PRATT, M.D.

Impedance Audiometry measures the mechanical function of the middle ear and adds a useful dimension to the audiometric examination in the evaluation of a hearing problem.

BACKGROUND

The fundamental concept, which forms the basis for impedance audiometry, is that when a measured quantity of sound is introduced into a closed cavity the quantity of sound reflected is dependent upon the size of the cavity and the physical characteristics of its walls. On the basis of this concept, an occlusive probe has been developed which may be inserted into the external auditory canal and close it externally (See Diagram 1). The probe contains three separate functional orifices. One, containing a loudspeaker, delivers a tone of 440 cycles into the cavity formed by the plug in the external canal, the external auditory canal and the surface of the tympanic membrane. The probe also makes connections with a microphone and measures the volume of the probe tone reflected from the walls of the cavity. The third orifice of the ear plug contains a tube connected to an air pump so that the pressure within the external canal may be changed. Change of pressure within the external auditory canal causes motion in a normal tympanic membrane.

If the pressure is increased, the tympanic membrane is pushed into the middle ear or "clamped" and by this means the quantity of sound reflected to the sensor in the ear probe is altered. In the same way, reduction of pressure in the external auditory canal pulls the tympanic membrane out into the ear canal and again alters the quantity of sound reflected to the probe. These alterations result from changes in the volume of the cavity and from changes in the tension of the tympanic membrane and reflective characteristics of the walls. The ability to change the pressure within this cavity permits us, by indication, to determine the pressure within the middle ear.

The point at which the tympanic membrane moves most freely is that where the pressure on each side of the tympanic membrane is the same. Alteration in pressure in either direction alters the movement of the normal tympanic membrane and this changes the reflection of sound. By using this equipment in a systematic manner, it is possible to evaluate the mechanical function and efficiency of the middle ear, which is equivalent to the conductive component of hearing.

The cochlear reflex is a protective reflex which reduces damage to the cochlea from loud noises and

may be activated by sounds of 85 to 100 db. When a loud noise is introduced into one ear, a reflex arc through the VIII N to the VII N produces contraction of the stapedius muscle which rocks the footplate of the stapes slightly out of the oval window, impairing the mobility of the ossicular chain, thereby protecting the cochlea from acoustic trauma. This alteration in the mobility of the ossicular chain changes the compliance of the middle ear and this change is readily recorded by impedance studies. The test may be used to provide two sets of information.

First, the ear exposed to sound must have intact neural pathways if the reflex functions normally.

Second, the contralateral facial nerve must be intact to the level of the stapedius muscle if the reflex occurs.

All testing in this study was done with the Madsen Z0-70 Electroacoustic Impedance Bridge fitted with a type R E 501 strip recorder. The mechanical function of the middle ear is the conductive component of hearing. This may be measured objectively by means of an acoustic bridge and does not require either subjective response or cooperation of the patient. This measurement of middle ear function is as useful in small children as it is in adults. Eustachian tube function is readily evaluated by this same instrumentation. The data obtained also provides useful information for the evaluation of eighth nerve palsy. The uses of impedance audiometry are:

1. Evaluation of Middle Ear Function
 1. Tympanometry
 2. Compliance
2. Evaluation of Eustachian Tube Function
 1. Manometric studies
3. Evaluation of Cochlear Reflex
 1. Cochlear Reflex
4. Evaluation of Eighth Nerve Function
 1. Cochlear Reflex

In studying the patient who is hard of hearing, it is essential to differentiate between conductive loss and nerve loss. Conventional audiometry provides adequate and reliable information which answers these questions. In mixed deafness, separating the conductive loss from the nerve loss is not always easy. Studies of middle ear compliance and tympanometry provide useful and reproducible measurement of conductive losses.

The underlying principle is the concept that middle ear lesions, close to or involving the tympanic membrane, make the greatest alterations in tympanometry, where those furthest from the tympanic membrane, i.e., involving the footplate of the

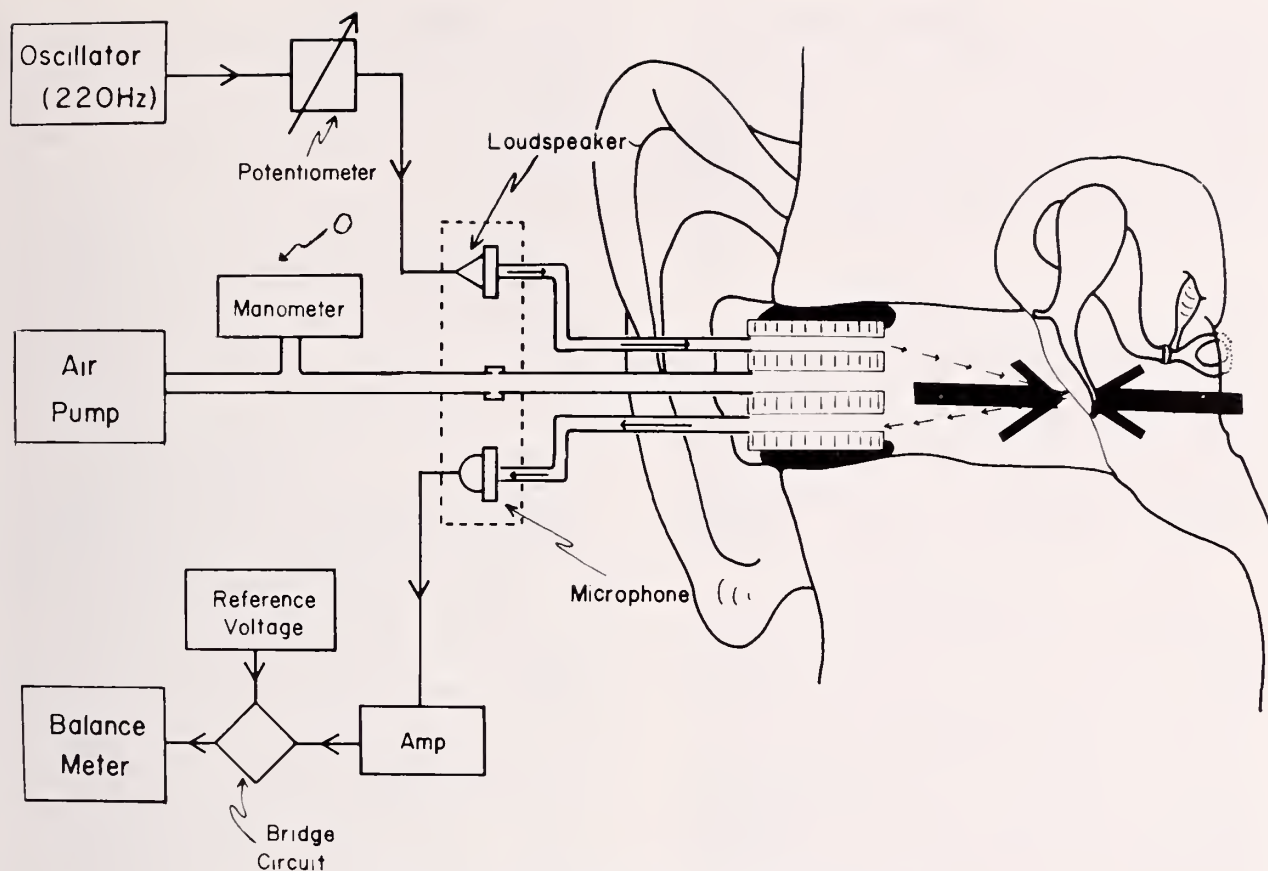


Diagram 1. Schematic Diagram of Electroacoustic Bridge.

stapes, make the least alteration in the tympanogram.

A normal middle ear cavity containing air and having a normal ossicular mechanism has compliance studies in the range of .27 cc-1.5 cc and a sharply peaked tympanogram curve at or nearly at the same pressure as the ambient atmospheric pressure, Curve type A (Fig. 1).

A normal ear that has been injured by otitis media in childhood may have a normal type curve, normal pressure studies and reduced compliance. This is typical of a "stiff" ear and the curve type is A_s (Fig. 2).

A middle ear full of thick sticky fluid is not compliant and has a flat tympanographic curve without evidence of a peak. Curve type B (Fig. 3).

If the middle ear contains fluid and also air bubbles, compliance is reduced, but not absent, due to the presence of bubbles and their compressibility the middle ear has negative pressure. The tympanogram is depressed and has a low peak on the negative side. Curve type B (Fig. 4).

Chronic Eustachian tube obstruction results in negative pressure within the middle ear. The ear may be compliant and have normal functional characteristics, yet reduction of middle ear pressure shifts the center of the typical curve to the negative

side of the graph. Normal limits are considered to be from +150 mm of water to -150 mm of water. Curves that peak outside of those limits are abnormal. As a matter of practice, these curves always peak at zero or on the negative side. This type curve is known as Type C (Fig. 5).

If the ossicular chain is interrupted, as in incudo-stapedial disarticulation, the tympanic membrane will move more easily than it would normally move. The tympanogram in this situation has a high peak, so high in fact, that it goes off the top of the chart, peaking somewhere in the area above (See Fig. 6). This curve is a peaking curve, with normal pressure characteristics and is known as A_d. This is a definitive distinction between a conductive hearing impairment due to disruption of the ossicular chain and one due to increased stiffness of the ossicular chain or to middle ear fluid.

In order to make these measurements, it is necessary to fit an ear piece into the external auditory canal; this occludes the canal with enough pressure to permit alteration of pressure within the external auditory canal from +400 to -400 mm of water. If a perfect seal is not obtained, measurements cannot be made.

In Chronic Otitis Media, air passes down the eustachian tube, thus providing a method of measur-

IMPEDANCE AUDIOMETRY

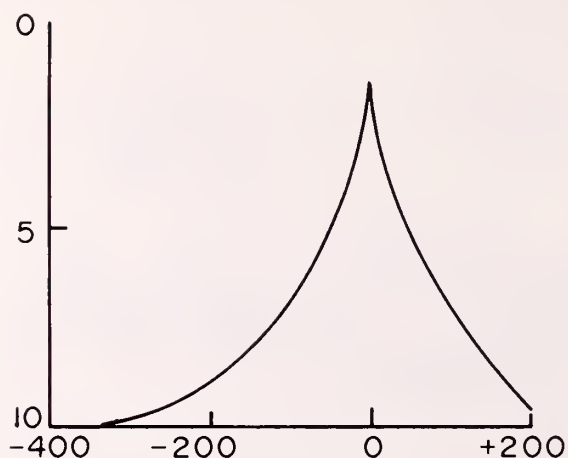


Fig. 1. Normal Tympanogram, Curve Type A.

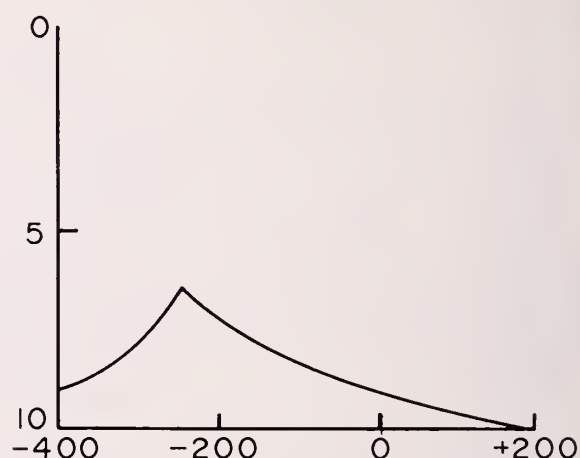


Fig. 4. Middle Ear Containing Fluid and Bubbles, Curve Type C.

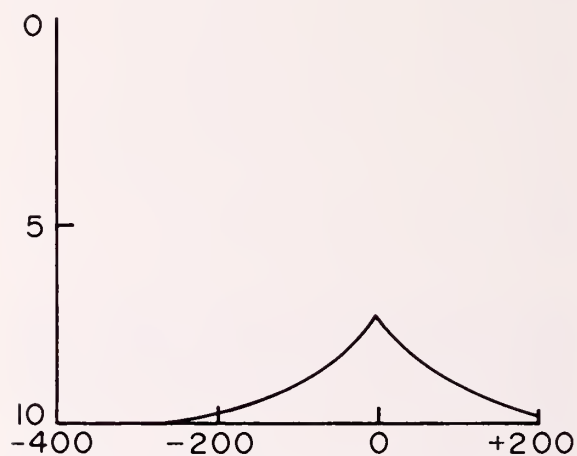


Fig. 2. Otosclerotic Tympanogram, Curve Type As.

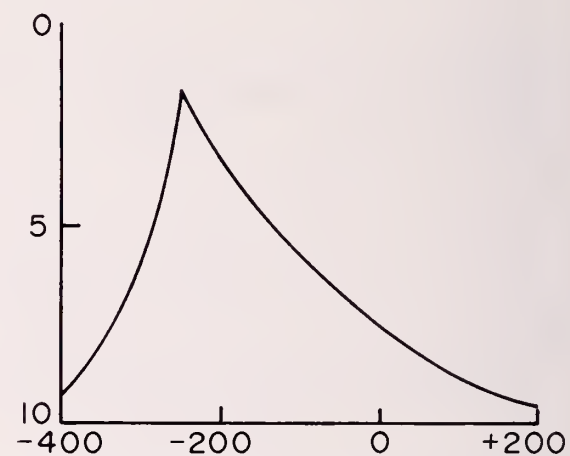


Fig. 5. Middle Ear with Marked Negative Pressure, Curve Type C.

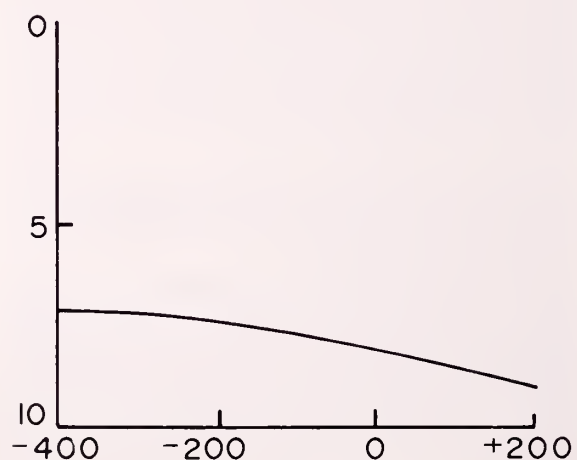


Fig. 3. Nonsuppurative Otitis Media, Curve Type B.

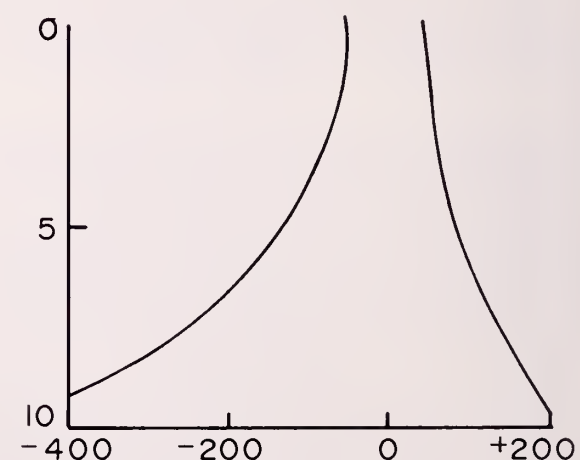


Fig. 6. Ossicular Disarticulation or Flaccid Tympanic Membrane, Curve Type Ad.

ing the opening pressure of the eustachian tube from positive pressure within the middle ear. If negative pressure is established within the middle ear and the subject caused to swallow or drink water, a threshold value can be determined for the opening pressure of the eustachian tube. This is the most useful of these measurements.

Evaluation of cochlear function is readily made by determination of the presence or absence of the cochlear reflex. If a tone is introduced into one normal ear at 85-100 db, the cochlear reflex produces bilateral stapedius contraction which alters the compliance of both middle ears. Thus, it is possible to stimulate one ear and use the responses of the other as objective evidence of cochlear response and intact cochlear pathways. This test makes possible the evaluation of small children, the mentally retarded and the functionally deaf in an objective fashion. A negative response is not conclusive but a clear-cut positive response is significant.

The cochlear reflex response has another practical use. In marked hearing losses, an active cochlear reflex is an objective test demonstrating recruitment (remembering the normal reflex occurs at 85 db to 110 db when the pure tone level is at 10 db to 20 db). If one is still able to elicit a reflex response at 85 db to 110 db when the pure tone threshold is severely impaired, recruitment is the only explanation for this phenomenon.

In evaluating facial nerve function, the cochlear reflex is important. If a normal response is present, it suggests the level of facial nerve injury is distal to the stapedius branch of the facial nerve. Absence of this reflex suggests a lesion proximal to the stapedius nerve.

It has been suggested that mass screening tests be replaced by impedance studies and that bone conduction testing be abandoned in favor of this physiologic measurement of middle ear function. However, this is not practical as it is possible to

have conductive hearing loss with normal impedance studies because lesions near to or involving the footplate of the stapes produce minimal alterations in the impedance study. In using impedance audiometry as a screening test, it is essential that all three tests, i.e., compliance, tympanometry and acoustic reflex are normal. If any of these vary from normal limits, further audiometric studies are indicated.

CONCLUSION

Impedance audiometry has a useful place in the evaluation of hearing loss in office practice. It is a simple objective test which supplies reliable reproducible data which augments our knowledge and information about the middle ear, the internal ear and the facial nerve and their functions. It is not meant to supplant other current physiologic examinations of the ear.

ACKNOWLEDGMENT

The author wishes to acknowledge the Schematic Diagram of the Impedance Audiometer supplied by American Electromedics Corp.

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325 Kennedy Mem. Dr., Waterville, Maine 04901

IMPROVING THE QUALITY OF MEDICAL CARE — A VERY MIXED BAG

Continued from Page 27

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Thayer Hospital, Waterville, Maine 04901

Suicide by Physicians

COR DE HART, M.D.*

Each year an average of one-hundred and eight physicians in the United States kill themselves. This represents about 3.2% of the total physician deaths occurring in the United States during the year. Suspected suicide is probably under-reported in the statistics, because of hesitancy by relatives and friends to admit that suicide was committed. Data on unsuccessful attempted suicides are unavailable. Guesses are that ratios of unsuccessful over committed suicide are about 5:1.

METHODS

The American Medical Association keeps records of deaths in the obituary notices of the Journal.

The notices were reviewed for the years 1966-1971. With the May 17, 1965 issue, deaths by suicide were openly reported. About 7% of the names in the death notices were females. For statistical purposes, we have excluded the female population and we have considered the population as mainly white physicians because of the small population of non-white physicians. As such, about 22,000 obituary notices were reviewed.

RESULTS

Table 1 shows the distribution of suicide by means of injury. Many commit suicide by firearms (231 deaths over the 6 year span). Next most frequent is suicide by drugs: Barbiturates, Analgesic and Soporific substances; they together amounted to 218 deaths. Carbon Monoxide was the next means of suicide, with 26 deaths over a six-year period. Or saying it in percentages: Firearms are used most frequently for committing suicide, about 39% of all suicides. Next follows the use of Barbiturates, 25% of all suicides. Eleven percent of the suicides are committed with analgesic and sleeping medications.

When we look at Table 2, we compare the percentage distribution of suicide by means of injury and we compare the American Physicians with the general white male population of the USA.

There are significant differences in the way physicians commit suicide: 36.4% used analgesic and soporific substances (including Barbiturates) as a means of suicide which is a 600% increase over the general white male population. But hanging, carbon monoxide and firearms are less frequently used in physicians, compared with the general white male population. In Table 3, we notice that the peak of the suicides by Barbiturates is in the 40-49 year age

TABLE 1

DISTRIBUTION OF SUICIDE BY MEANS OF INJURY PHYSICIAN SUICIDE, 1966-1971, USA							
Means of Injury	1966	1967	1968	1969	1970	1971	Total
Drowning*	13	6	4	8	8	7	46
Barbiturates	17	27	24	22	34	25	149
Analgesic and Soporific Substances	9	4	9	6	17	24	69
Firearms	41	36	44	31	41	38	231
Other Solid and Liquid Substances (Cyanide)	0	2	1	2	1	0	6
Lacerations and Stabbing	2	0	3	2	6	3	16
Jumping	0	1	0	0	0	1	2
Carbon Monoxide	3	6	4	5	5	3	26
Asphyxia	2	1	2	0	1	1	7
Strangulation	1	3	1	1	5	2	13
Unspecified	22	16	12	3	21	6	80
Total	97	96	100	72	131	103	599

*Some of the drowning cases are accidental. In the notification of deaths, this was not clear. They are not included in the total suicides per year.

TABLE 2

PERCENTAGE DISTRIBUTION OF SUICIDE BY MEANS OF INJURY			
AMERICAN PHYSICIANS* COMPARED WITH GENERAL WHITE MALE POPULATION OF USA**			
Means of Injury	Physicians		White Males
Barbiturates	24.9)		
Analgesic and Soporific Substances (including Barbiturates)	11.5)		36.4%
Solid and Liquid Substances (Cyanide)			1.0%
Gases: Carbon Monoxide			4.3%
Hanging and Strangulation			3.3%
Firearms			38.5%
Cutting and Piercing Instruments			2.7%
Jumping from High Places			0.3%
Unspecified Means			13.5%
			100.0%

*over the years 1966-1971

**population USA 1964

TABLE 3

PHYSICIAN SUICIDE BY AGE GROUP AND MEANS FOR THE YEARS 1966-1971					
	Drugs	Barbiturates	Firearms	Unspecified	Total
25-29	11	8	2	2	23
30	9	7	10	8	34
35	12	13	13	11	49
40	24	28	24	3	79
45	19	28	26	12	85
50	21	15	23	3	62
55	18	10	29	14	71
60	14	9	23	5	51
65	13	2	18	2	35
70	3	2	7	1	13
75	2	1	8	0	11
80	0	0	3	1	4
85	1	2	1	0	4
All Ages:	147	125	187	62	521

*Courtesy staff, Thayer Hospital, Waterville, Maine 04901.

TABLE 4

SUICIDE RATE PER 100,000 PHYSICIANS COMPARED WITH GENERAL WHITE POPULATION					
	Average* Number of Physicians	Number of Suicides	Physicians Suicide Rate	White Male** Suicide Rate	Physicians Over General Population
Under 30	31,000	23	12.4	13.2	0.94
30-34	39,500	34	14.3	16.0	0.89
35	38,500	49	21.2	19.6	1.08
40	37,500	79	35.1	24.5	1.43
45	33,000	85	42.9	29.9	1.43
50	27,300	62	37.9	36.4	1.04
55	25,100	71	49.8	40.1	1.24
60	19,500	49	41.9	41.0	1.02
65	13,400	39	48.5	40.4	1.20
70	9,000	13	24.1	46.5	0.52
75 and over	11,800	24	33.9	54.1	0.63

*average for the year 1967⁵

**for the year 1968

bracket, for firearms it is in the 50-59 year age bracket. In almost all the age groups between 35-70, the physicians have a higher suicide rate than the general white male population. This is especially noticeable in the 40-50 age bracket where there are 43% more suicides in the physicians than in white men (see Table 4). There are less suicides in the younger age group 25-35 and much less in the 70 and over bracket amounting to about 40-50% less.

DISCUSSIONS

On July 25, 1903, the editor in *The Journal of the American Medical Association*¹ had noticed that the suicide by physicians "far exceeds the average ratio of suicide in the general population and the editor goes on to say that the reasons were overcrowding of physicians and overwork. And . . . it is not remarkable that failures must occur, that many of our professional brethren have to drop out of the profession in one way or another and that . . . those as morbidity disposed . . . might very easily adopt suicide as the most direct way to end their troubles." Interestingly enough, Simon² in a study about mortality among medical students, pointed out that already among "medical students, rates of death from

suicide increased more rapidly than among the general population . . . These data are the more remarkable since medical students have their origins in the more favored socio-economic segments of the population, which generally exhibits lower morbidity-mortality rates than is true for the general population."

Warren Breed³ in a study on suicide and occupational morbidity reasoned that upwardly mobile men have a higher probability of committing suicide. To study physicians as a group, we have compared them with the general population. The Occupational exposure of the physicians to Barbiturates and Analgesic and Soporific drugs affected the suicide mortality. A 600% increase was noticeable.

From a study by Li,⁴ we know that chemists, for instance, use the poison Cyanide to which they have easy access, much more frequently for committing suicide.

SUMMARY

An examination of *The Journal of the American Medical Association* obituary notices of male physicians, for the years 1966-71, revealed 645 deaths by suicide in a six-year period. The physicians had a higher suicide rate than the general white male population, up to 40% in the age group 35-70. In the younger age group 25-35, suicide was about 10% less and in the over 70 age group about 40% less. The male physicians used drugs, especially Barbiturates, as a method of suicide more often than the general white male population.

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Ruptured Abdominal Aortic Aneurysm Presenting With Peripheral Neuropathy

LEANDER A. GUTE, JR., M.D. and BRUCE TREMBLY, M.D.

A case is presented of longstanding ruptured aneurysm of the infrarenal aorta with symptoms suggestive on admission of nerve root irritation from intervertebral disc disease. Pathogenesis of the peripheral neuropathy in this instance proved to be due to an expanding retroperitoneal false aneurysm dissecting into the right groin. Two similar cases have been reported in 1967 by Razzuk, Linton and Darling,¹ successfully treated by aneurysmectomy with recovery of function. A case of monoplegia of the right lower extremity developing with aortic rupture in a patient with a pre-existing iliac artery aneurysm was described by Kubacz, et al in 1971.² A case report by Bolton and Blumgart in 1973³ with foot drop antecedent to aortic rupture may have been due to peripheral embolization of atheromatous debris or thrombus with resultant ischemic neuropathy. The uncommon presenting complaint obscured the proper diagnosis and delayed corrective therapy in this case, as with others previously reported.^{1,2,4}

CASE REPORT

A seventy-year-old male was referred to the Neurosurgical Service of Thayer Hospital with recent exacerbation of severe pain and swelling of the right leg. Three to four months earlier orthopedic evaluation had been done elsewhere because of incapacitating back and right leg pain. There was a history of weight loss over the previous three months.

On admission the patient was acutely ill, thin and pale, holding his right leg externally rotated and flexed. Passive movement of the leg produced severe pain. An abdominal aortic aneurysm was noted on admission, with guarding in the right lower quadrant and edema in the femoral triangle and inguinal region. Neurologically, there was an absent knee reflex on the right as compared to the left side, as well as spotty sensory deficits in the distribution of the femoral and lateral femoral cutaneous nerves. This was felt to be consistent with peripheral femoral nerve palsy. General surgical consultation was obtained. The possibility of malignancy was strongly considered until the aortogram demonstrated a ruptured aneurysm and a large pseudo-aneurysm extending into the right pelvis. The night prior to elective surgery, the patient developed acute exacerbation of symptoms, with dropping hematocrit. Emergency exploration was done. A large infrarenal aortic aneurysm was found, displacing the duodenum and right kidney, having ruptured posteriorly and to the right, with a large, tense pseudo-aneurysm extending retroperitoneally into the pelvis. After controlled cross-clamping above the aneurysm and across the uninvolving iliac arteries, the aneurysm was unroofed and the contents evacuated. It was noted that the fourth lumbar vertebra was eroded anteriorly. A sinus tract passed into the large pseudo-aneurysm that had dissected beneath the vena cava into the psoas muscle. From there it extended retroperitoneally beneath the investing fascia into the inguinal region. Since the aneurysm spared the iliac vessels, a straight aortic replacement graft from the infrarenal aorta was used to the bifurcation.^{4,5,6} No attempt was made to evacuate all the clot from the pseudo-aneurysm, and the area was not drained.

Postoperatively the patient had an episode of sudden auricular

fibrillation on the second day, treated with rapid digitalization. Convalescence was also prolonged by pre-existing inanition and a postoperative depression. The edema and paresthesia of the right leg made ambulation difficult, but the patient was discharged with a walker on the twentieth postoperative day. One month later his weight became stable and although motor strength was improved, a minor hip contracture required physical therapy. When last seen one year after surgery, his weight was up about 30 pounds and he had no residual neurologic deficit.

DISCUSSION

The neurologic manifestations of dissecting aneurysm have long been known and described in the literature, especially with reference to involvement of the arch of the aorta.^{7,8} Paraplegia as a complication of ruptured aortic aneurysm, or following resection of an aortic aneurysm has been reported as an uncommon complication.³ Peripheral neuropathy complicating abdominal aneurysm must be rarer still, since a review of the literature turned up the two reported cases with ruptured abdominal aneurysm, and the one case with an associated iliac artery aneurysm.^{1,2}

Pure femoral neuropathy as a complication of hemophilia or in Heparin therapy has been well reported in the literature since 1939.² Here the mechanism is due to compressive neuropathy secondary to spontaneous hemorrhage in a confined space beneath the intact fascia over the psoas and iliacus muscles, with hemorrhage into muscle tissue. A review of the anatomy of the lumbosacral plexus is necessary to explain the compressive neuropathy. Both the femoral and obturator nerves have their origins from ventral divisions of the lumbar nerve roots two, three, and four. These lie behind, and at the lateral border of the iliopsoas muscle. From there the course of the femoral nerve between the iliacus and psoas muscles, beneath the investing fascia to the femoral triangle under the inguinal ligament, would make it susceptible to compression or stretching by a false aneurysm in that area. With a pure femoral neuropathy, a patient will demonstrate weakness of hip flexion and knee extension and an absent knee reflex. The sensory deficit would be over the medial and anterior thigh, extending just below the knee medially via the saphenous nerve branches. With added obturator nerve involvement sensory deficits would be small, and there would be weakness of adduction. This weakness would not be complete, however, as the adductor magnus is also supplied by branches from the sciatic nerve. The demonstrated deficits in this case were not classical,

Continued on Page 39

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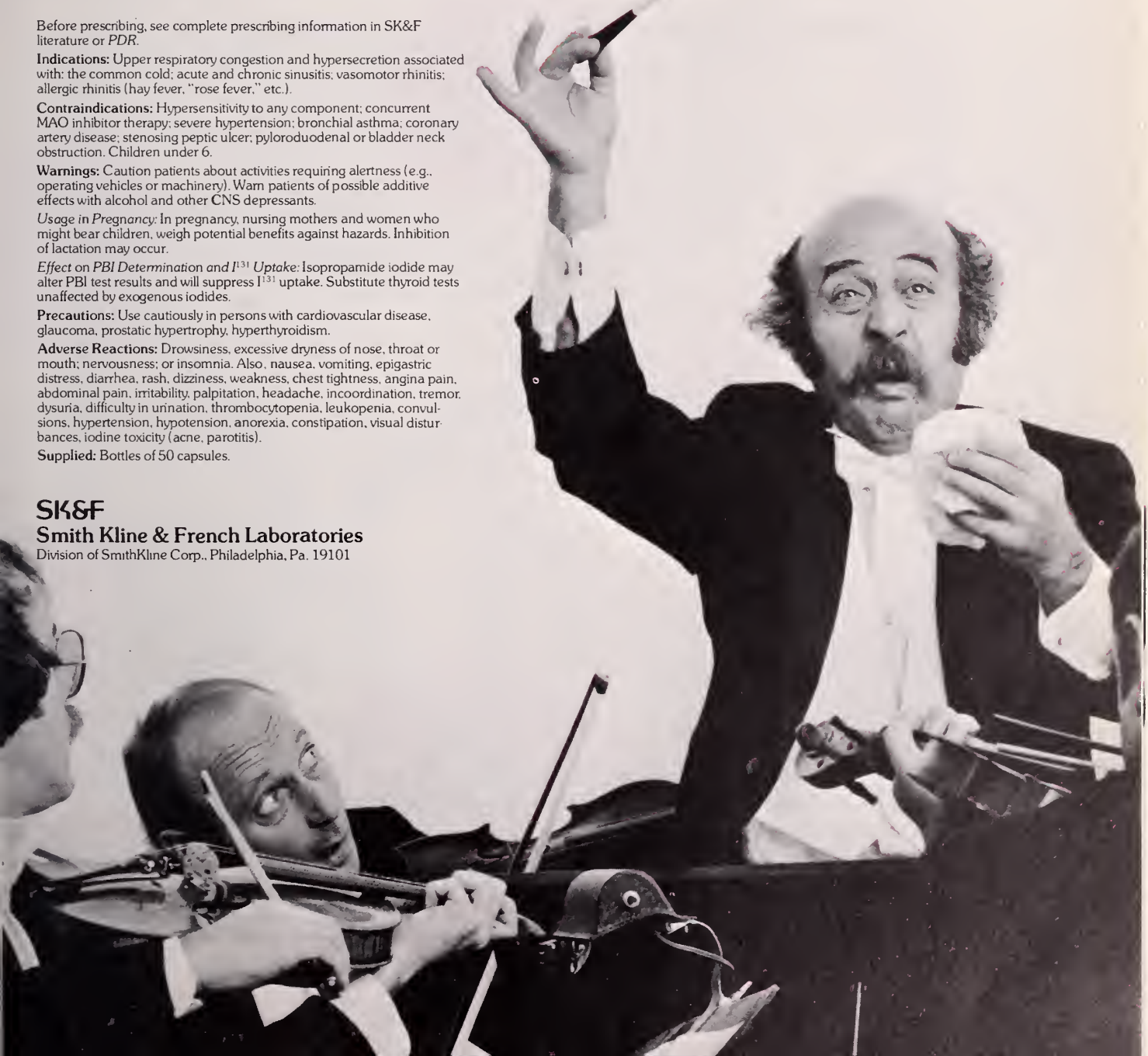
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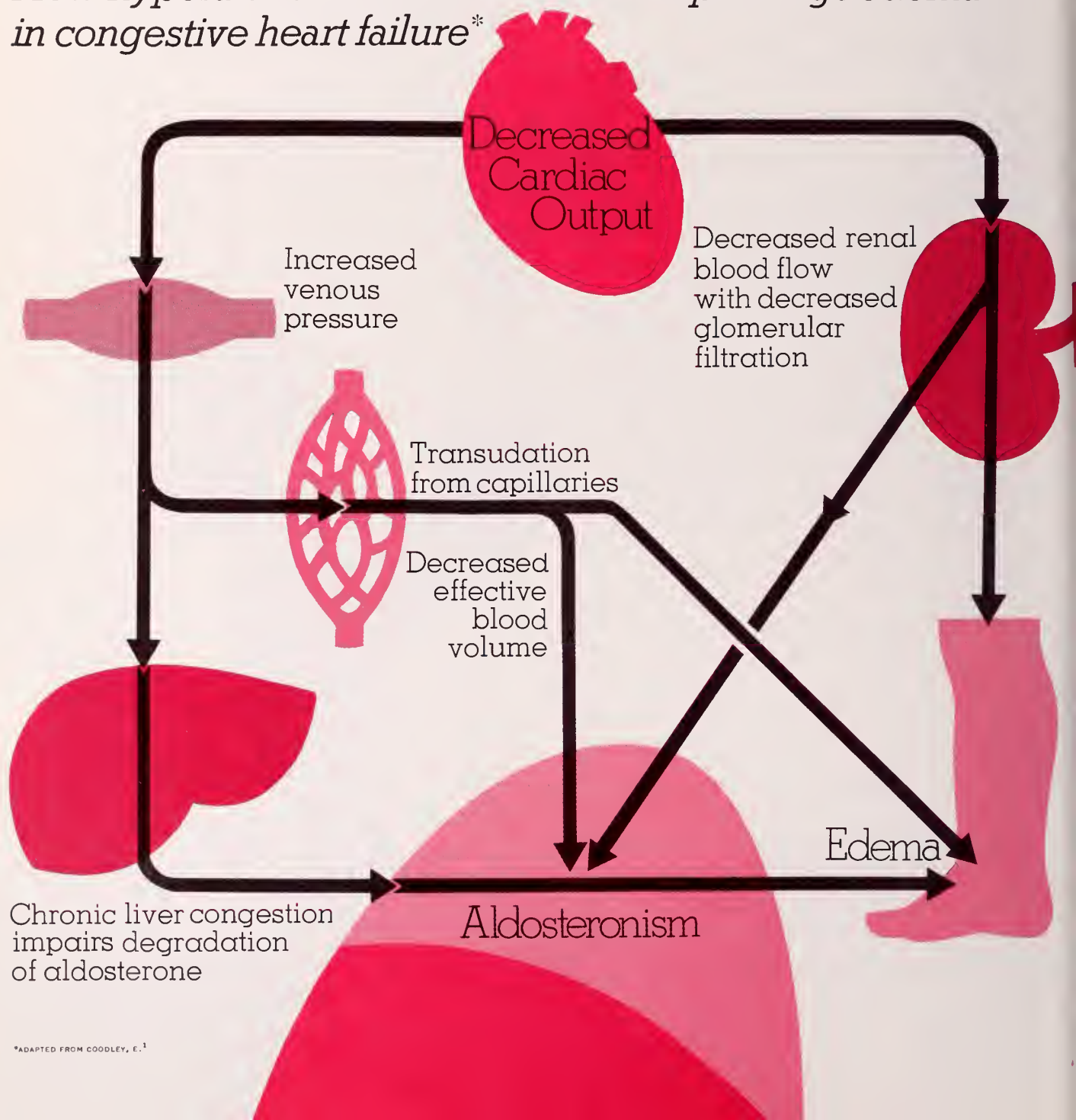
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Contraindications—Acute renal insufficiency, rapidly progressing impairment of renal function, anuria and hyperkalemia.

Warnings—Potassium supplementation may cause hyperkalemia and is not indicated unless a glucocorticoid is also given. Discontinue potassium supplementation if hyperkalemia develops. **Usage of any drug in women of childbearing age requires that the potential benefits of the drug be weighed against its possible hazards to the mother and fetus.**

Precautions—Patients should be checked carefully since electrolyte imbalance may occur. Although usually insignificant, hyperkalemia may be serious when renal impairment exists; deaths have occurred. Hyponatremia, manifested by dryness of the mouth, thirst, lethargy and drowsiness, together with a low serum sodium may be caused or aggravated, especially when Aldactone is combined with other diuretics. Elevation of BUN may occur, especially when pretreatment hyperazotemia exists. Mild acidosis may occur. Reduce the dosage of other antihypertensive drugs, particularly the ganglionic blocking agents, by at least 50 percent when adding Aldactone since it may potentiate their action.

Adverse Reactions—Drowsiness, lethargy, headache, diarrhea and other gastrointestinal symptoms, maculopapular or erythematous cutaneous eruptions, urticaria, mental confusion, drug fever, ataxia, gynecomastia, inability to achieve or maintain erection, mild androgenic effects, including hirsutism, irregular menses and deepening voice. Adverse reactions are infrequent and usually reversible.

Dosage and Administration—For **essential hypertension in adults** the daily dosage is 50 to 100 mg. in divided doses. Aldactone may be combined with a thiazide diuretic if necessary. Continue treatment for two weeks or longer since an adequate response may not occur sooner. Adjust subsequent dosage according to response of patient.

For **edema, ascites or effusions in adults** initial daily dosage is 100 mg. in divided doses. Continue medication for at least five days to determine diuretic response, add a thiazide or organic mercurial if adequate diuretic response has not occurred. Aldactone dosage should not be changed when other therapy is added. A daily dosage of Aldactone considerably greater than 75 mg. may be given if necessary.

A glucocorticoid, such as 15 to 20 mg. of prednisone daily, may be desirable for patients with extremely resistant edema which does not respond adequately to Aldactone and a conventional diuretic. Observe the usual precautions applicable to glucocorticoid therapy; supplemental potassium will usually be necessary. Such patients frequently have an associated hyponatremia—restriction of fluid intake to 1 liter per day or administration of mannitol or urea may be necessary (these measures are contraindicated in patients with uremia or severely impaired renal function). Mannitol is contraindicated in patients with congestive heart failure, and urea is contraindicated with a history or signs of hepatic coma unless the patient is receiving antibiotics orally to "sterilize" the gastrointestinal tract.

Glucocorticoids should probably be given first to patients with nephrosis since Aldactone, although useful for diuresis, will not directly affect the basic pathologic process.

For **children** the daily dosage should provide 1.5 mg. of Aldactone per pound of body weight.

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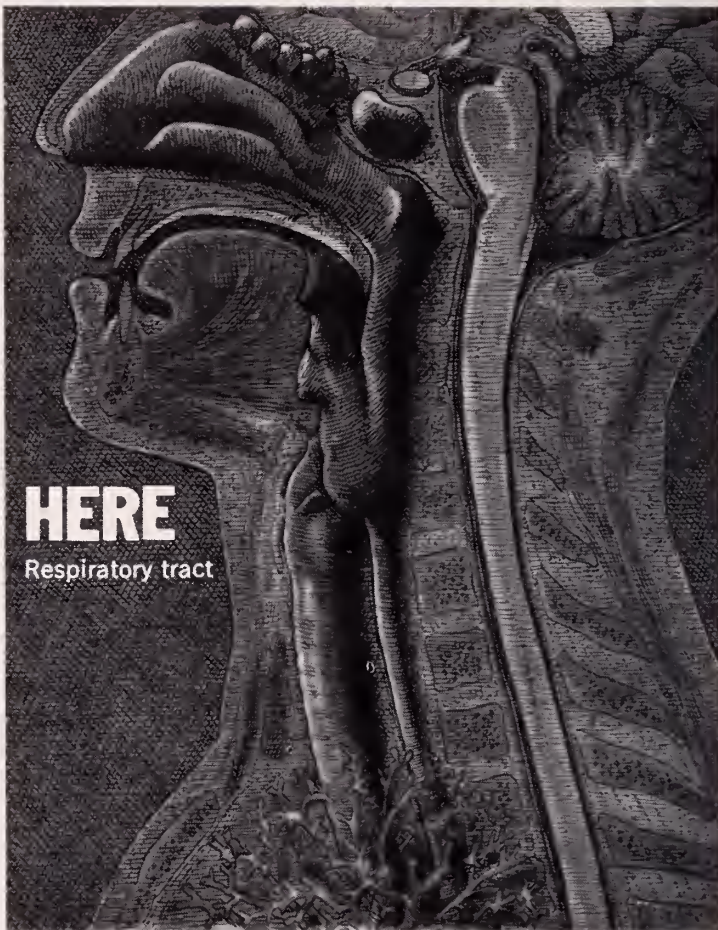


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Patterns of Pulmonary Histoplasmosis

DAVID R. GINDER, M.D.*

Histoplasmosis is an infection found world wide. Although spores and evidence of infection are found in a tropical and semitropical distribution, the greatest incidence of infection has been found in Missouri, Arkansas, Tennessee, and Kentucky area of the United States. Colder areas of the world appear to be relatively free of histoplasmosis spores and infection. No isolations of histoplasmosis spores have been reported in Maine and the incidence of positive histoplasmosis skin tests is believed to be very low — probably less than one percent. However, it is important in today's mobile society to be familiar with the manifestations of histoplasmosis. There is even the possibility that changes in the environment, or other conditions in the chicken broiler houses of Maine might permit *H. capsulatum* to grow; should this happen histoplasmosis could become a familiar disease in this area.

Epidemiology, Pathology, and Pathogenesis

Histoplasmosis is acquired as a respiratory tract infection. The source of the infection is an area (usually soil contaminated with bat or bird droppings) suitable for *H. capsulatum* colonization. These areas of colonization are point sources of infection. Rotted tree stumps, soil that is being dug for a garden, chicken coops or a building excavation in an area grossly contaminated by starling droppings are familiar examples of point sources of histoplasmosis infection.

Once histoplasmosis mycelia reach the alveoli, they change to yeast form as they produce the same general type of alveolar infiltrate and regional lymph node reaction that occur in tuberculosis. The histologic reaction varies from the evanescent polymorphonuclear and mononuclear cell reaction to frank caseation necrosis. Resolution or progression of the lesion appears to be influenced by native resistance (low in infancy and in those over 60 years), cellular immunity and exogenous influences such as adrenal corticosteroid therapy.

Clinical manifestations and chest roentgenograms in pulmonary histoplasmosis resemble pulmonary tuberculosis. Most infection is asymptomatic and chest films normal. Minimal symptomatic infection manifest by fever, malaise, and non-productive cough is associated with varying degrees of pulmonary infiltrate and/or enlarged hilar lymph nodes. Classical acute pulmonary histoplasmosis is char-

acterized by bilateral hilar lymph node enlargement and multiple pulmonary nodules. Other roentgenologic manifestations of pulmonary histoplasmosis include thin walled cavities, pulmonary infiltrate with fibrosis and cavitation indistinguishable from chronic active pulmonary tuberculosis and solitary pulmonary nodules (histoplasmoses). Radiographic patterns of histoplasmosis differ from pulmonary tuberculosis in that (1) calcification occurs earlier, more frequently and in larger masses than in pulmonary tuberculosis and that (2) clinically detectable pleural infusion is rare in histoplasmosis.

The pathogenesis of the various pulmonary manifestations of histoplasmosis is not well defined because of the roles of progressive primary infection, reactivation of infection and reinfection have not yet been clarified. Undoubtedly all three mechanisms can play a role. However, it seems likely that most pulmonary lesions represent varying manifestations of primary infection.

Diagnosis

Aspects of the diagnosis of histoplasmosis will be illustrated in case histories but some basic principles will be discussed here. As in any infectious disease, diagnosis depends on isolation and identification of the microorganisms and/or demonstration of a significant increase in titer of circulating antibodies. In pulmonary histoplasmosis, fungi cannot be successfully identified directly in sputum preparations. Indeed it is difficult to cultivate histoplasmosis from sputum because the normal bacterial flora of the mouth tend to overgrow the histoplasma organisms. Isolation of *H. capsulatum* from lung, bone marrow, or the body tissue is considerably easier because of the absence of contaminating bacteria. In infected tissue, periodic acid — Schiff (PAS) and silver (Grocott) stains are used to help identify yeast phase organisms.

A fourfold or greater rise in titer of complement fixing antibodies (yeast or mycelial phase) or a single specimen titer of 1:32 or greater suggests active histoplasmosis. Histoplasmosis latex agglutinating antibodies develop sooner and persist a shorter time than do complement fixing antibodies. Although the latex test can be performed in any laboratory, it cannot be well controlled and therefore is unreliable.

Histoplasmosis skin tests are interpreted in the manner of tuberculin tests. Negative tests do not rule out histoplasmosis and positive tests do not establish it. Furthermore, positive tests may stimulate

*Patients described in the paper were observed when the author was a member of the Department of Medicine, University of Missouri School of Medicine, Columbia, Missouri.

complement fixing antibodies and further confuse the situation.

Clinical and Radiologic Manifestations of Pulmonary Histoplasmosis

CASE #1. ACUTE PULMONARY HISTOPLASMOSIS

A 14-year-old girl complained of non-productive cough, general malaise, headache, and fever (101°-104°F) of ten days' duration. Physical examination revealed no abnormal physical findings. Chest film revealed bilateral hilar lymph node enlargement and multiple nodular densities fanning out from the hilum bilaterally (Fig. 1).

No pathogenic microorganisms grew in sputum cultures. Histoplasmosis latex agglutinating antibodies were positive in a titer of 1:1028; complement fixing antibodies were present at a titer of 1:32 (yeast phase) and 1:8 (mycelial phase).

The patient's temperature fell to normal without specific treatment in ten days. The pulmonary lesions cleared rapidly. Within six weeks of the beginning of the illness, many of the lesions had begun to calcify (Fig. 2).

COMMENT: This patient's illness illustrates the typical course of acute pulmonary histoplasmosis. Fourteen days after playing in a rotted tree stump, the patient developed relatively mild symptoms of illness but a fever that was impressively high.

The initial chest film with its bilateral enlarged hilar lymph nodes and multiple nodular infiltrates stands out in contrast to the patient's minor respiratory tract complaints. The chest film, although typical of acute pulmonary histoplasmosis, is not diagnostic. For example, tuberculosis, sarcoid and tularemia could present with similar findings. However, the epidemiologic information combined with the clinical data and the chest film findings strongly suggested that the illness was acute pulmonary histoplasmosis. This was confirmed by serologic studies.

The massive inhalation of spores that produces such pulmonary lesions is accompanied by early dissemination (bone marrow cultures are frequently positive in such patients). This is noted here as an aid to diagnosis and also to make the point that this dissemination is ordinarily benign in normal children and adults and does not require amphotericin B treatment.

CASE #2. PERSISTENT HILAR LYMPH NODE ENLARGEMENT

A 27-year-old student was studied for vague chest pain. He had rheumatic fever as a teenager but cardiovascular examinations were within normal limits. The chest film, however, revealed enlarged right hilar lymph nodes with infiltrate extending into the anterior segment of the right upper lobe (Fig. 3).

Bronchoscopy and bronchograms were within normal limits. Complement fixing antibodies (yeast phase) were repeatedly positive at a titer of 1:32. Several large caseating lymph nodes containing purulent material were removed at thoracotomy. Silver stains revealed a few histoplasmosis like organisms in necrotic areas of the lymph nodes but *H. capsulatum* did not grow on culture. Cultures for tuberculosis revealed no growth.

COMMENT: The findings in this patient represent the residual of acute pulmonary histoplasmosis.

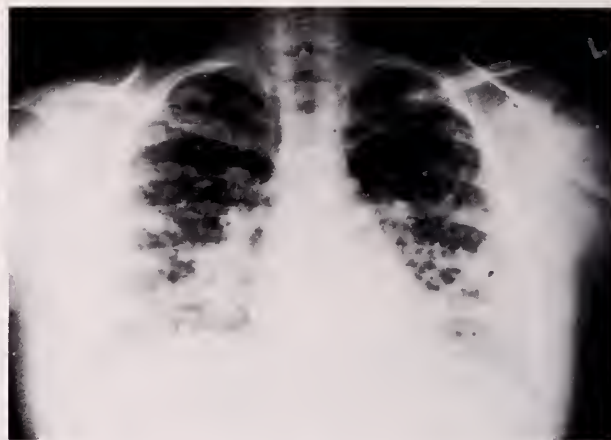


Fig. 1

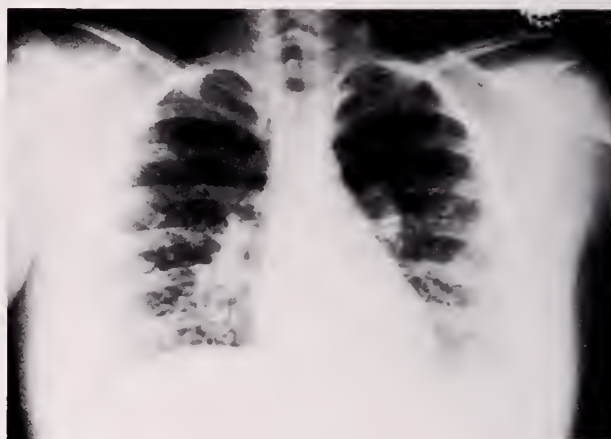


Fig. 2

Sometime between his last chest film (age 20) and age 27 he developed acute pulmonary histoplasmosis. The disease probably smoldered for some time and was discovered quite by accident.

As in tuberculosis, chronic histoplasmosis lesions sometimes contain silver staining yeast phase organisms that can't be cultured. It is generally believed that these organisms are dead.

CASE #3. PROGRESSIVE PULMONARY DISEASE WITH CHRONIC DISSEMINATION

An 18-year-old school boy complained of chills and fever reaching as high as 105°F., malaise, and a 50 pound weight loss of about six months' duration.

Physical examination revealed evidence of weight loss. The spleen was felt five centimeters beneath the left costal margin. Chest film revealed bilateral infiltrates extending into the lung parenchyma from enlarged hilar and paratracheal lymph nodes (Fig. 4). The bone marrow biopsy revealed granuloma. Although no microorganisms resembling histoplasmosis were seen, culture of the bone marrow revealed *H. capsulatum*.

Histoplasmosis complement fixing antibodies were present at a titer of 1:256 (yeast phase) and 1:128 (mycelial phase).

The patient refused treatment and left the hospital 36 hours after admission. Three months later he was admitted to another hospital where he was treated successfully with amphotericin B.



Fig. 3



Fig. 4

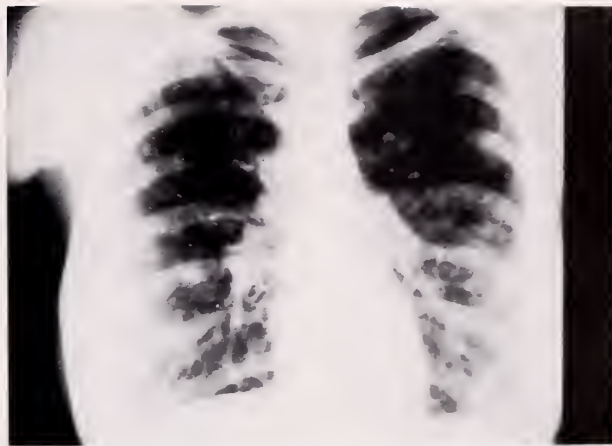


Fig. 5



Fig. 6

COMMENT: In the absence of an adequate history and earlier x-rays, one can only propose that the sequence of events went something like this. Primary pulmonary histoplasmosis developed a year or two before the patient came to the hospital. The hilar node enlargement did not resolve despite the development of calcification (Fig. 5 from a different patient illustrates such a stage of events). Later resis-

tance became inadequate and the histoplasmosis progressed with further enlargement of the hilar and paratracheal lymph nodes and spread into adjacent lung. Widespread dissemination into the reticulothelium system occurred. Despite the malaise, weight loss and high fever, the patient was able to carry on for about six months before seeking medical care. In contrast, disseminated tuberculosis



Fig. 7

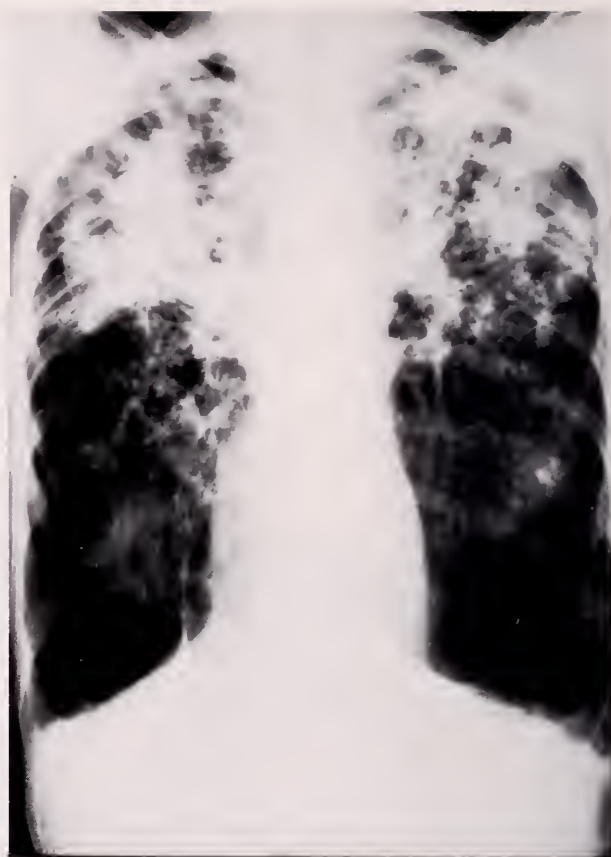


Fig. 8

tends to run a more acute course — about 75% of the patients seek medical attention within three months of the symptomatic onset of their disease.

CASE #4. SUPERIOR VENA CAVA OBSTRUCTION

A 28-year-old secretary was thought to have sarcoidosis when an asymptomatic right paratracheal mass was seen in the chest film. Scalene lymph nodes biopsy revealed no abnormalities. The patient did not return for further studies and was next seen two years later when she complained of facial fullness and edema. The neck veins were distended to the angle of the jaw and the paratracheal mass was considerably larger than on previous chest films.

Serologic studies revealed positive histoplasmosis complement fixing antibodies at a 1:32 titer (yeast phase).

Thoracotomy was undertaken to establish the diagnosis and relieve the obstruction if possible. At operation, a fibrous mass with a very thick tough capsule was found to obstruct the superior vena cava. Tissue removed contained a few areas of caseation necrosis. Grocott stains revealed histoplasmosis like organisms but there were no growth on culture.

COMMENT: In this patient, evidence of histoplasmosis prior to surgery included a 1:32 titer of complement fixing antibodies and a slowly progressive paratracheal mass without other clinical or roentgen signs of histoplasmosis except for calcifications scattered in the chest film. The pathogenesis of this lesion is probably best explained as primary pulmonary infection with the clinical roentgen mani-

festations limited to paratracheal mass causing the superior vena cava obstruction. The cause of the dense fibrosis that obstructs vena cava (and sometimes bronchi) is not known;¹ fortunately it is a rare manifestation of histoplasmosis.

CASE #5. CAVITARY HISTOPLASMOSIS

A 62-year-old farmer entered the hospital for surgical treatment of a duodenal ulcer. Preoperative chest film revealed a 4 centimeter cavity with fluid level in the apex of the right lung. There was very little infiltrate surrounding the cavity (Fig. 6).

Reevaluation of the patient revealed only that he had a minimal non-productive cough, slight fatigue, and a 5 pound weight loss in the previous three months.

H. capsulatum grew from sputum cultures. Histoplasmosis latex agglutinating antibodies were absent but complement fixing antibodies were present at a titer of 1:64 (yeast phase) and 1:32 (mycelial phase).

The patient refused treatment for histoplasmosis.

COMMENT: This patient illustrates how relatively asymptomatic patients can be with cavitory pulmonary histoplasmosis. The numerous areas of calcification (up to one centimeter in diameter) in the hilar areas and the absence of latex fixing antibodies suggest the histoplasmosis infection was not new. Therefore, it is likely that this patient's illness represents either reactivation or reinfection.

The ease with which *histoplasma capsulatum*

were recovered from sputum is typical of cavitary pulmonary histoplasmosis.

CASE #6. PROGRESSIVE PULMONARY HISTOPLASMOSES

A 58-year-old lady who had chronic obstructive pulmonary disease moved to an old farm. One of her first projects was to thoroughly clear a poorly ventilated abandoned chicken house. Two weeks after cleaning the chicken house, fever, cough, productive of yellow sputum, headache, and malaise began. Persistence of these signs and symptoms and chest films demonstrating diffuse pulmonary infiltrate prompted her admission to the hospital (Fig. 7).

Sputum smears and cultures revealed no pathogenic organisms. The histoplasmosis latex agglutination was positive at a dilution of 1:16. Later, complement fixing antibodies were reported positive at a titer of 1:32 (mycelial phase) and 1:16 (yeast phase). During the first week of her hospitalization, the pulmonary lesion progressed and the patient developed pulmonary insufficiency. Histoplasmosis was strongly suspected. To prove the diagnosis, open lung biopsy was performed. Histologic examination revealed granuloma. PAS and Grocott stains revealed organisms morphologically resembling histoplasmosis. Later, cultures grew *H. capsulatum*. During the amphotericin B treatment, only modest resolution of the lesions occurred although the temperature and other signs and symptoms of disease activity came under control promptly. Within three months of infection, much of the diffuse area of infiltrate appeared to be calcified (Fig. 8).

COMMENT: The patient was a Missouri native who had lived on farms all her life. It is therefore probable that she had had histoplasmosis earlier in her life. Considering the epidemiologic data, it seemed likely that this histoplasmosis pneumonia

represented reinfection histoplasmosis. This analysis was supported when a chest film, taken five years earlier, was found. It revealed hyperexpanded lungs and multiple large hilar calcifications (some as much as 1-2 centimeters in diameter).

SUMMARY

Pulmonary patterns of histoplasmosis have been reviewed and illustrated with chest films in terms of epidemiology, pathogenesis, pathology and diagnosis. Although Maine residents do not acquire histoplasmosis locally, some Maine citizens acquire histoplasmosis elsewhere and patients from other sections of the country may develop histoplasmosis while they are in Maine. Therefore, it is important to keep in mind the patterns of pulmonary histoplasmosis.

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RUPTURED ABDOMINAL AORTIC ANEURYSM PRESENTING WITH PERIPHERAL NEUROPATHY

Continued from Page 34

and the lateral sensory deficits would suggest involvement of the lateral cutaneous nerve of the thigh which has its origin from the lumbar nerves two and three and courses under the inguinal ligament laterally, around the anterior superior iliac crest. Whether the mechanism in this case was compression or irritation with traction of nerve roots is speculative, but as with the reported cases, recovery was also complete in this patient.

ACKNOWLEDGEMENT

The authors wish to thank Dr. Hans Shurman of Dexter for allowing this case to be presented.

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A Cross Section View of a Community Hearing and Speech Center in Maine

BRUCE D. OLSEN, Ph.D.*

The F. T. Hill Center for Communication Disorders was organized in 1970 as a living memorial to Frederick Thayer Hill, M.D. Dr. Hill, a Waterville otolaryngologist who was known internationally, played a vital role in the inception and development of Thayer Hospital. Because of his interest in speech and hearing disorders, many of his friends raised money in his memory to begin a department of Thayer Hospital which specialized in habilitating and/or rehabilitating individuals with such disorders. The center was envisioned to be a community hearing and speech center with a medical director and an advisory board of interested community people functioning as a department within Thayer Hospital.

The decision to choose the concept of a community service oriented to speech and hearing was an important one. Unlike other centers where research or student training is paramount, the community oriented hearing and speech center has as its only goal giving the best possible treatment to each individual patient.

The composition of the Hill Center includes: (1) The Advisory Board. (2) The Medical Director. (3) The Hospital Administration. (4) The Staff. The Advisory Board is made up of the hospital administration, concerned physicians, and various interested community people. The board is used to assist the center in gaining a perspective of its service to the community at large. Major program shifts and services are discussed by the board. Such items as the inclusion of a video-tape system as a way of reviewing treatment services by the staff, for in-service education, and patient confrontations are discussed. The concept of taking services to the community has been stressed by the Advisory Board; probably their most important service is reviewing the areas of quantity and quality of service as well as of fiscal responsibility. These functions are assured by monthly reports giving each board member an opportunity to review the statistics for the month as well as the outside activities of the staff members. Advisory Board members are encouraged to feedback constructive criticism to the center at regular meetings with the director and the staff.

The Medical Director, Dr. Loring W. Pratt, an otolaryngologist in the city of Waterville, has served as the initial medical director of the center. He is responsible for the medical supervision of the pa-

tients seen at the center. This does not imply that the medical director specifically diagnoses or prescribes hearing and speech services for each and every patient. He is, however, responsible for the medical well-being of all patients seen at the center and is responsible to the Hill Center Advisory Board and to the Hospital Board of Trustees should a question of medical nature arise in patient care given at the center. His advice is sought before major changes in equipment or procedures are made. He is able to react as a representative of the medical profession to policies and procedures being considered by the center.

The hospital administration has helped this new department in its inception and operation by the generous donation of adequate space as well as approval of up-to-date equipment in both speech pathology and audiology. The relationship of the center to the hospital is that of being a department in the hospital setting.

Each member of the staff of the center has at least a Master's degree in speech pathology or audiology and is a member in good standing of the American Speech and Hearing Association. The center has maintained high standards as demonstrated by the meeting of criteria of the interim standards set by the American Speech and Hearing Association, both in speech pathology and in audiology.

The critical value of services in speech pathology and audiology was well known to the founders of this center. Such questions as, where a patient who has suffered a cerebrovascular accident may help in the recovery of speech, where a patient can receive an objective hearing aid evaluation, where a patient can receive middle ear diagnostics or an eighth nerve lesion work-up, or where a laryngectomy patient can learn to talk again are all answered through the services provided at the center.

Referral. The referral system to the Hill Center is a simple one. A patient may refer himself or another person to the Hill Center for diagnostic services and/or counseling. Voice diagnostics and treatment for hearing aid evaluation, however, must come from an otolaryngologist. The reason for this is that a hoarse voice may well be an early sign of cancer or other disease and often deafness can be cured by appropriate medical treatment and surgery. In many other instances, it may be best if a referral comes through the treating or attending physician. Individuals who may be described in this include patients who have had a cerebrovascular ac-

*F. T. Hill Center for Communications Disorders, Waterville, Maine 04901.

cident, a total laryngectomy, suffered from neurological trauma or disease, or who have congenital anomalies such as cleft palate or hearing impairment.

Services. The center offers a wide range of services in speech pathology and audiology. In speech pathology, diagnostic and treatment services are offered in the areas of aphasia, voice cases, delayed speech — both expressive and receptive, and for various reasons ranging from environmental deprivation to autism and mental retardation, articulation (mispronunciation of sounds), stuttering, laryngectomy (reteaching a patient to speak), cleft palate, and various neurological disorders including Parkinsonism and others. Computer technology, videotape equipment, research literature, and various modern techniques are available to the speech pathologist to assist in the habilitation and rehabilitation of the patient.

In audiology, the services are also diagnostic as well as treatment-oriented. Diagnostic services include the traditional retrocochlear lesion testing using a conventional audiometer, but also include the most recently developed impedance testing and Bekesy sweep frequency and fixed frequency testing. Hearing aid evaluations include many of the procedures described above. Following this evaluation, various hearing aids are tried to see which make and model works best. It is imperative to understand that the Hill Center does not sell hearing aids and that the tests which are used are unbiased. Any patient may feel assured that if a hearing aid is warranted, he will receive the best possible testing and counseling. If a hearing aid is not warranted, the patient will be so advised.

Other diagnostic workups in audiology include the detection of malingerers, pre-employment hearing tests, pre-school and school hearing screening tests, and neonatal testing of "high-risk" babies. Hearing tests and hearing aid checks for those who already have a hearing aid and want to know if it is functioning optimally are available. Lip reading and auditory training for both children and adults is offered. For the hearing handicapped child, a program is offered by a trained teacher of the deaf in oral communication. Lip-reading courses of ten lessons in length are offered in the fall and in the spring to adventitiously hard of hearing adults.

COMMUNITY PROGRAMS

A hearing and speech center is not complete without special programs for the community. Programs at the Hill Center include the following: a New Voice Club for laryngectomees, a Club for Parents of Hard of Hearing and Deaf Children, a professional summer lecture series, a community hearing screening program, a permanent loaner hearing aid program, and in-service professional lectures on speech and hearing.

The Hill Center has established the only New Voice Laryngectomy Club connected with a community hearing and speech center in the State of Maine. This New Voice Club is recognized by the International Association of Laryngectomees and meets once a month at Thayer Hospital.

A club has also been formed for parents with hard of hearing and deaf children. This is an informal group which discusses problems, listens to speakers, and watches movies related to the hard of hearing child. Plans are currently being formulated for a caption film series during vacations for children as well as recreational plans for vacations. This includes integrating the hard of hearing children with normal hearing children in these activities.

A summer lecture series has been organized to offer in-service education to the staff and for professionals interested in the disorders of hearing and speech. Invited guest speakers discuss recent research in speech pathology and audiology or other related areas. Speakers have included various branches of medicine, psychology, and hearing aid professionals.

Hearing clinics have been arranged in nearby communities to offer testing and advice to those who normally would not ordinarily go to a hearing and speech center. These clinics have been sponsored by local service organizations and are well received in these communities. As of this writing, sponsored clinics have been held in Camden, Waterville, Skowhegan, and Unity. It is our hope that these clinics can be held on an annual basis in each community.

A permanent loaner hearing aid program has been established for indigent geriatric patients. A completely reconditioned hearing aid obtained by this center by donation is "loaned" on a permanent basis without cost. The only responsibility is the purchase of an ear mold if the patient does not have one and for batteries necessary for the operation of the aid. Approximately seventeen aids have been placed in the past year with people who would not otherwise have been able to afford such amplification.

Seminars have been given to allied professionals to acquaint them with the techniques used in speech and hearing and to assist in the habilitation or rehabilitation of the patient. These seminars often include the review of techniques for use by the various allied health professionals. Areas of seminars have included communication problems of those with a CVA, laryngectomy, and hard of hearing children.

It is the hope of those responsible for the F. T. Hill Center for Communication Disorders that it will serve as a model for what services a community and speech center may offer the physician and his patient in Maine.



NATIONAL HEALTH REPORT

The following report is an excerpt from "The Blue Shield," the newspaper of the National Association of Blue Shield Plans.

As political surprises continue to surface in Washington, developments in National Health Insurance legislation are appearing as well. The major bills, whose sponsors include the American Medical Association, American Hospital Association, labor and the Health Insurance Association of America, have been overshadowed by the recently revised National Health Insurance Partnership Act of 1972 and the introduction of the three-part catastrophic NHI plan by Senators Long and Ribicoff.

The Health, Education and Welfare drafted government plan has retained the underlying principles of the Administration's plan introduced last year, although it corrects the fundamental criticisms of the previous bill. It consists of two parts, the Standard Employer Plan (SEP) and the Government Assurance Plan (GAP), with both including a health maintenance organization option.

Under SEP, employers would be required to offer a minimum level of health insurance and pay 75 percent of the premium costs. The benefit package would include hospital expenses; doctor bills, with the exception of some areas of preventive medicine; other medical services covered by Medicare with the exception of chiropractors, prescription drugs; limited mental health care; limited nursing home care; and eye examinations, eyeglasses, hearing aids and dental care for children under 12. Covered services would be subject to an annual person deductible of \$150 with a maximum family liability of three deductibles, and coinsurance of 25 percent for expenses over the deductible. However, all cost sharing would be waived after a family incurred \$1,500 in out-of-pocket expenses for cost sharing in a single year.

The Government Assurance Plan would replace Medicaid, the federal-state plan which provides medical care for the poor. It would have a premium, deductible and cost sharing structure that would be related to income. Under GAP, the government would contract with private carriers who would offer coverage to anyone seeking it. The benefits provided would be the same as in SEP. Carriers of both programs will be required to provide enrollees with "health cards," similar to credit cards, to provide greater efficiency.

President Nixon, in his September State of the Union address, announced his support of such a balanced public and private health insurance partnership although he cited that no real push for this reform will appear until the second session of Congress.

The Catastrophic Health Insurance and Medical Assistance Relief Act, S. 2513, proposed by Senators Russell Long (D-La.) and Abe Ribicoff (D-Conn.) is a three-part plan which would amend the Social Security Act by providing government insurance against the cost of catastrophic illness. Section I would establish a Social Security administered trust fund which would pay all material costs above \$2,000 and all hospital costs beyond 60 days for all persons covered by the Social Security System, as well as their spouses and dependents. Section II would eliminate Medicaid replacing it with a Medical Assistance plan for low income people also administered by SSA. The third Section would create a new Title XV encouraging insurance carriers to provide basic health insurance through a voluntary certification and the total number of cosponsors, according to Senator Long, will be one-third of the Senate.

From the Secretary's Notebook

Summary of 1973 Fall Meeting of the M.M.A. House of Delegates

The Fall Meeting of the M.M.A. House of Delegates was held at St. Joseph Hospital in Bangor, Maine on Sunday, December 9, 1973 with an attendance of 41 delegates and alternates and eleven guests. Paul A. Fichtner, M.D., President of the M.M.A., called the meeting to order, and George W. Bostwick, M.D., Speaker of the House, presided.

1. A film on **Tel-Med**, a public health information service which uses a collection of tape recorded health messages, was shown by Dr. Harold I. Blumenstein of Farmington. He reported that the Franklin County Medical Society has endorsed this program and it plans to submit an application for a pilot project area in Franklin County (budget for this county is expected to be \$27,000 the first year, \$14,000 the second and third years). Approval of this project by the M.M.A. will cause significant support in winning acceptance Statewide. Dr. Blumenstein added. Dr. Wood made a motion that this project be referred to the Executive Committee for their appraisal and report to the Interim Meeting of the House of Delegates in April 1974 and this was *voted*.

2. Dr. Dewey Richards requested that the M.M.A. appoint four of its members to work with representatives of the Maine Osteopathic Association and the Maine Chapter of the AAFP on an acceptable **Statewide fee schedule for Medicaid**. Physicians are now paid on a profile basis which makes it very expensive to administer. If a set fee schedule could be drawn up — to be updated annually — higher fees could be paid to the physicians because of decreased administrative costs. Dr. Wood proposed that our Advisory Committee to the Health Care Financing Committee be appointed to study a fee schedule for Medicaid, and this was *voted*.

3. Dr. Maurice Ross, Chairman of the M.M.A. Committee on Maternal and Child Welfare, was present to discuss the proposed new **bill re treatment of minors** (copy sent to delegates prior to the meeting). A motion was made that the M.M.A. adopt the model bill, as prepared, as policy of the M.M.A., and this was *voted*. Dr. Ross's committee, and the committee on Legislation, will work with other State agencies in this matter.

4. Committee reports came from: **Emergency Medical Services** (Darrell P. Thorpe, M.D., Chair-

man); **Peer Review** (Richard T. Chamberlin, M.D., Chairman); and **Continuing Education** (Richard T. Chamberlin, M.D., Chairman).

5. **Report of AMA Delegate** — Dr. Robert McAfee gave an excellent summary of AMA actions at its Clinical Convention held in Anaheim this week. The AMA has been extremely forceful in attempts to secure relief from the Cost of Living Council. Dr. McAfee stated, but PSRO dominated the agenda at the meeting. A lengthy resolution was adopted re PSRO, and a complete report of this action appeared in the January 1974 issue of The Journal of the M.M.A.

6. **Report of the Executive Committee's study of PL 92-603 (PSRO)** — Doctor Fichtner's report concentrated on the following four areas, as directed by the June House of Delegates: 1) Freedom of choice between physician and patient; 2) Freedom of choice of mode of therapy; 3) Ability to maintain confidentiality of the record of any patient, and 4) Liberal consideration of the welfare of the patient and reasonable clinical research. The resolution passed in June said we could comply with legislation which allows these four criteria. Dr. Fichtner said, and it is not certain — it could be interpreted either way. The Executive Committee approved the setting up of a separate PSRO corporation, and the applying for a PSRO grant. In response to a question from the floor, Dr. Hanley stated that funds are not yet available, and in addition, as yet no regulations are out. Union Mutual lawyers are working on setting up bylaws for the PSRO corporation, and it is not anticipated that any substantial amount of Association funds will be used. As yet, the five M.D. incorporators have not been named.

Dr. Kirk Barnes made a motion calling for a referendum of M.M.A. members, recommending the repeal of the PSRO law. The motion generated a great deal of discussion, but it was not seconded. Dr. Wood reminded the delegates of action already taken re PSRO in June, and asked the House to reaffirm that position, i.e.,

- 1) The M.M.A. advise the PSRO section of HEW of the deficiencies in Title 11 of Public Law 92-603,
- 2) That the membership of the M.M.A. work with officials of PSRO (HEW), American Medical Association, and other state medical associations to correct these deficiencies,

- 3) That the Secretary of HEW be informed that in order to be most effective, the State of Maine should be designated as a single PSRO area.

This position was *reaffirmed*.

7. **Malpractice Insurance Program** — Dr. Fichtner presented a proposal from Morse, Payson & Noyes of Portland as carriers for a malpractice insurance program through St. Paul. They now insure about 200 Maine physicians and would like to enlarge on this number, with M.M.A. sponsorship. Advantages suggested would include readily available legal counsel, coordinated claims control, rate stability and annual report to Association on type and frequency of claims. Rates at present are similar to those of other companies insuring a large number of our members. Dr. Richard Swengel proposed that we accept Dr. Fichtner's report, but that we *not* vote endorsement, and this was *carried*.

8. Other —

a) Dr. Carl Richards, representing the Maine Board of Registration of Medicine, reported that the new Management and Cost Survey has recommended that there be a **single licensing board** in the State for M.D.'s, barbers, hairdressers, etc., and that the Board of Registration of Medicine reserve funds (collected mainly from out-of-state licensees), be put into the State's General Fund. Dr. Richards

asked that the M.M.A. defray the cost of legal services to help preserve the present organizational setup of the Board of Registration of Medicine, adding that the Board itself can't do this because they're a government body. They would like to see their funds used for educational purposes, rather than put into the General Fund. Doctor Fichtner proposed that this be referred to the Executive Committee for its next meeting, and this was so *voted*.

b) Mr. James McLoughlin of RMP, stated that he has been a public relations consultant in Maine for four years. He asked the physicians to consider getting organized with a **public relations program**, and he is available to discuss this further.

c) **Legal Counsel** — Dr. Wood expressed the Executive Committee's feeling that Mr. Charles Cragin did an excellent job for us during the last legislative session, but urged that our members should involve themselves more by giving our lobbyist more direction. A motion was made that the House of Delegates approve the policy of having a lobbyist under the auspices of the M.M.A., and this was *voted*. The hope was expressed that all our members, as well as our Legislative Committee, become actively involved.

9. Adjourned at 6:10 p.m.

PATRICIA A. BERGERON
Secretary-Treasurer, M.M.A.

Interim Meeting of the M.M.A. House of Delegates

Saturday, April 6, 1974

Thayer Hospital, Waterville, Maine

12:30 P.M. — Registration; 1:00 P.M. — Lunch; 2:00 P.M. — Meeting

10:00 A.M. — Meeting of the Executive Committee

Maine Medical Association

SPECIAL COMMITTEES 1973-1974

Special Committees for 1973-1974 have been appointed by the President of the Maine Medical Association,
Paul A. Fichtner, M.D. of Bath.

Committee on Aging

James H. Bonney, M.D., 53 Chadwick St., Portland 04102 —
Chairman
Ahmet Satir, M.D., P. O. Box 682, Augusta 04330
Richard T. Chamberlin, M.D., Thayer Hospital, Waterville
04901

Amy W. Pinkham Fund Committee

Virginia C. Hamilton, M.D., South Harpswell 04079 — Chair-
man
Charles E. Burden, M.D., 1 North St., Bath 04530
Ella Langer, M.D., 192 Capitol St., Augusta 04330
Lloyd G. Davies, M.D., 249 Ocean House Rd., Cape Elizabeth
04107

Arthritis Committee

Paulding Phelps, M.D., 229 Vaughan St., Portland 04102
Joseph A. Marshall, M.D., 177 Main St., Waterville 04901
Charles R. Glassmire, M.D., 37 Deering St., Portland 04101
Hadley Parrot, M.D., 431 State St., Bangor 04401

Committee on Conservation of Vision

Dexter J. Clough, 2nd, M.D., 224 State St., Bangor 04401 —
Chairman
Paul E. Floyd, M.D., 2 Middle St., Farmington 04938
Ralph A. Goodwin, Jr., M.D., 33 Court St., Auburn 04210
Maurice Van Lonkhuyzen, M.D., 131 State St., Portland 04101
Richard H. Dennis, M.D., 325A Kennedy Mem. Dr., Water-
ville 04901
Payson B. Jacobson, M.D., 295 Brighton Ave., Portland 04102
Jou S. Tchao, M.D., 181 Russell St., Lewiston 04240

Diabetes Committee

Melvin Bacon, M.D., 27 June St., Sanford 04073 — Chair-
man
Elton R. Blaisdell, M.D., 233 Vaughan St., Portland 04102
Harold D. Cross, M.D., Main Rd. & Summer St., Hampden
Highlands 04445

Maine Committee — AMA-ERF

Charles R. Glassmire, M.D., 37 Deering St., Portland 04101 —
Chairman
Paul A. Fichtner, M.D., 10 Oak Grove Ave., Bath 04530
W. Edward Thegen, M.D., Elm St., Bucksport 04416

Liaison Committee Between the Maine Bar Association and the Maine Medical Association

John A. Woodcock, M.D., 109 State St., Bangor 04401 — Chair-
man
Linus J. Stitham, M.D., 50 Main St., Dover-Foxcroft 04426
James H. Bonney, M.D., 53 Chadwick St., Portland 04102
Charles F. Branch, M.D., 69 Gamage Ave., Auburn 04210
George W. Wood, III, M.D., 156 N. Main St., Brewer 04412

Liaison Committee Between the Maine Pharmaceutical Association and the Maine Medical Association

Robert F. Russell, M.D., Castine 04421
Lewis E. Phillips, M.D., 336 Mt. Hope Ave., Bangor 04401
Harry L. Harper, M.D., 17 Main St., So. Paris 04281

Committee on Maternal and Child Welfare

Maurice Ross, M.D., 372 Main St., Saco 04072 — Chairman
Alice A. S. Whittier, M.D., 143 Neal St., Portland 04102
William M. Shubert, M.D., 336 Mt. Hope Ave., Bangor 04401
Ella Langer, M.D., 192 Capitol St., Augusta 04330
Benjamin L. Shapero, M.D., 431 State St., Bangor 04401
Vassilios Handanos, M.D., 191 Lincoln St., Rumford 04276
Albert Shems, M.D., 313 Main St., Lewiston 04240
Morris A. Lambdin, M.D., Maine Coast Mem. Hospital, Ells-
worth 04605
Kenneth W. Sewall, M.D., 2 School St., Waterville 04901
Lionel R. Tardif, M.D., 97 Campus Ave., Lewiston 04240
George W. Hallett, M.D., 22 Bramhall St., Portland 04102
John Zerner, M.D., 49 Deering St., Portland 04101

Committee on Medical Aspects of Sports

Paul A. Brinkman, M.D., Farmington 04938 — Chairman
Lawrence Crane, M.D., 157 Pine St., Portland 04102
Clarence E. Dore, M.D., 2 School St., Waterville 04901
Daniel F. Hanley, M.D., P. O. Box 250, Brunswick 04011
Marion K. Moulton, M.D., West Newfield 04095
Paul H. Cummings, M.D., 10 High St., Lewiston 04240
Richard M. Swengel, M.D., 477 Main St., Lewiston 04240
Llewellyn W. Cooper, M.D., Hancock St., Bar Harbor 04609
John J. Pearson, M.D., 100 S. Main St., Old Town 04468
Philip R. Kimball, M.D., 336 Mt. Hope Ave., Bangor 04401

Committee on Medicine and Religion

Peter A. Emmett, M.D., 489 State St., Bangor 04401 — Chair-
man
Edward L. Reeves, M.D., 179 Sabattus St., Lewiston 04240
Benjamin L. Shapero, M.D., 431 State St., Bangor 04401
Marcel P. Houle, M.D., 200 Alfred St., Biddeford 04005
Edward J. Hughes, Jr., M.D., 336 Mt. Hope Ave., Bangor
04401
John G. Murray, Jr., M.D., Blue Hill Mem. Hospital, Blue
Hill 04614
Warren C. Hazelton, M.D., 2 E. Main St., South Paris 04281

Committee on Mental Health

John A. Ordway, M.D., RFD #4, Box 53, Bangor 04401 —
Chairman
Alan M. Elkins, M.D., Maine Medical Center, Portland 04102
Morris J. Seligman, M.D., Veterans Adm. Center, Togus 04330
Stella L. Uldall, M.D., Box 724, State Hospital, Augusta 04330
Nicholas Fish, M.D., 12 Sturtivant Rd., Cumberland Foreside
04110
Paul A. Jones, Sr., M.D., General Delivery, Union 04862
Alphonse Telfeian, M.D., 321 Brackett St., Portland 04102
Peter B. Aucoin, M.D., 151 Franklin St., Rumford 04276
John J. Pearson, M.D., 100 S. Main St., Old Town 04468
Peter W. Bowman, M.D., 56 Baribeau Dr., Brunswick 04011
Willem F. Nieuwkerk, M.D., P. O. Box 424, Kennebunkport
04046
Ake Akerberg, M.D., 487 Main St., Lewiston 04240
John A. Arness, M.D., 73 Deering St., Portland 04101 (Non-
member of M.M.A.)

Advisory Committee to the Pine Tree Society for Crippled Children and Adults, Inc.

Charles E. Burden, M.D., 1 North St., Bath 04530 — Chairman

Marvin C. Adams, M.D., 52 Gilman St., Portland 04102
E. Charles Kunkle, M.D., Maine Medical Center, Portland 04102
Maurice Ross, M.D., 372 Main St., Saco 04072
John E. Knowles, M.D., 52 Gilman St., Portland 04102
Everett A. Orbeton, M.D., 131 Chadwick St., Portland 04102

Committee on Rehabilitation

John J. Lorentz, M.D., Maine Medical Center, Portland 04102 — Chairman
John A. Woodcock, M.D., 109 State St., Bangor 04401
Roger J. P. Robert, M.D., 258 Main St., Saco 04072
Stephen E. Monaghan, M.D., 7 Bramhall St., Portland 04102
Eugene P. McManamy, M.D., 72 West St., Portland 04102

Medical Advisory Committee to the Secretary of State and to the Bureau of Motor Vehicles

Richard C. Dillihunt, M.D., 7 Bramhall St., Portland 04102 — Chairman
George L. Maltby, M.D., 31 Bramhall St., Portland 04102
Milan A. Chapin, M.D., 237 Turner St., Auburn 04210
Wilbur B. Manter, M.D., 1 Fern St., Bangor 04401
Richard H. Dennis, M.D., 325A Kennedy Mem. Dr., Waterville 04901

Research Fund Committee

Irving I. Goodof, M.D., Thayer Hospital, Waterville 04901 — Chairman
Saul R. Polisner, M.D., 143 Vaughan St., Portland 04102
Mason Trowbridge, Jr., M.D., 142 Pine St., Bangor 04401
Richard C. Wadsworth, M.D., 489 State St., Bangor 04401
Adviser
Peter W. Rand, M.D., Dir., Dept. of Research, Maine Medical Center, Portland 04102 (Nonmember of M.M.A.)

School Health Committee

Edmund N. Ervin, M.D., 2 School St., Waterville 04091 — Chairman

Marion K. Moulton, M.D., West Newfield 04095
George W. Bostwick, M.D., P. O. Box 388, Newcastle 04553
Sidney R. Branson, M.D., 37 Main St., South Windham 04082
Lloyd G. Davies, M.D., 249 Ocean House Rd., Cape Elizabeth 04107
Randall H. Silver, M.D., Maine Coast Mem. Hospital, Ellsworth 04065

Committee on Computer Utilization in Medical Practice

Charles C. Morrison, M.D., Damariscotta 04543 — Chairman
Henry J. Wheelwright, M.D., Augusta Gen. Hospital, Augusta 04330
Edward Schmidt, M.D., Naval Air Station, Brunswick 04011 (Nonmember)
Robert Ritchie, M.D., Maine Medical Center, Portland 04102 (Nonmember)
Advisers
Richard T. Chamberlin, M.D., Thayer Hospital, Waterville 04901
Mr. Derek V. Bush, 50 Union St., Ellsworth 04605

Ad Hoc Committee to Committee on Allied Health Professions

William L. MacVane, Jr., M.D., 211 State St., Portland 04101
George W. Bostwick, M.D., P. O. Box 388, Newcastle 04553

Tumor Registry Committee

Ronald J. Carroll, M.D., 255 Western Prom., Portland 04102 — Chairman
Alan W. Boone, M.D., 111 State St., Bangor 04401
Stanley E. Herrick, Jr., M.D., Central Maine Gen. Hospital, Lewiston 04240
Henry J. Wheelwright, M.D., Augusta Gen. Hospital, Augusta 04330
Stanley C. Beckerman, M.D., 175 Silver St., Waterville 04901
Eugene Beaupre, M.D., Thayer Hospital, Waterville 04901 (Nonmember of M.M.A.)

Annual Meeting Dates For Your 1974 Calendar . . .

Maine Medical Association, June 15-18
Shawmut Inn, Kennebunkport, Maine

American Medical Association, June 23-27
Chicago

Necrologies

OID F. POMERLEAU, M.D.

1905-1973

Dr. Ovid F. Pomerleau, 67, prominent Waterville, Maine physician and surgeon, died at a local hospital on September 1, 1973 after being stricken ill at home.

He was born in Winslow, Maine on October 5, 1905, son of Omer and Marie Gagne Pomerleau.

Dr. Pomerleau was graduated from Winslow High School, Colby College in 1930 and received his medical degree from Jefferson Medical College of Philadelphia in 1934. Dr. Pomerleau, a familiar figure on Main Street for many years, opened his office at 179 Main Street in 1935 and practiced there until his death. He was on the medical staff at Sisters Hospital and later at Seton

Hospital, and was a past president of the medical staff and served on the advisory board.

He was a member of the Kennebec County Medical Association, the Maine Medical Association, the American Medical Association and the International College of Surgeons.

Surviving are his widow, Mrs. Florence Beaudet Pomerleau; one son, Dr. Ovid F. Pomerleau, Jr. of Philadelphia, Pennsylvania; two daughters, Miss Betty Ann Pomerleau and Miss Susan Mae Pomerleau of Waterville; one sister, Mrs. John Ayotte of Waterville; one brother, Romeo Pomerleau of Winslow; two grandchildren and several nephews, nieces and cousins.

MAURICE J. DIONNE, M.D.

1904-1973

Dr. Maurice J. Dionne, 69, of Brunswick, Maine, a foremost physician, surgeon and civic leader for many years, collapsed and died on October 24, 1973 while playing chess at the Brunswick Recreation Center.

A native of Lewiston, Maine, he was born on June 11, 1904, son of Elude and Marie-Louise Bernier Dionne. He was valedictorian of his graduating class in 1923 from Lewiston High School, was graduated from Bliss Business College, Bates College in 1927, and received his medical degree from Harvard Medical School in 1931. Following his internship at the Central Maine General Hospital from 1931 to 1932, Dr. Dionne located in Brunswick.

Dr. Dionne served on the Brunswick School Board for approximately 24 years; the last 14 as chairman. He was cited by the Town of Brunswick at the Brunswick High School graduation exercises on June 12, 1962, for his outstanding contribution to the welfare, development and progress of education in that town. He had been a member and chairman of the municipal planning board.

He owned and operated the Brunswick Community Hospital from 1943 to 1956, was one of the founders of the Regional Memorial Hospital, and served as chief of staff. Dr. Dionne was given the Citizen of the Year award of the Brunswick Chamber of Commerce in 1969.

A successful businessman, as well as a busy physician, he operated a large dairy farm with his brother, Dr. Bertrand B. Dionne, a veterinarian. For many years, he produced a locally popular brand of ice cream and distributed milk, both under the

name Dee's. He discontinued the ice cream and retail sales operations some 15 years ago.

Dr. Dionne was a member and past master of United Lodge, No. 8, AF & AM, and belonged to all levels of Masonry, becoming a Noble of the Mystic Shrine in 1954, and serving on the Medical Staff of Kora Temple. In 1968, he was presented the Simon Greenleaf Medal for his unusual contribution to Masonry. The accompanying citation pointed out, "Dr. Dionne's ecumenical philosophy is outstanding. His religious affiliation has been with the Roman Catholic Church, and at the same time he has been most prominent and active in his Blue Lodge and in Masonry in general." He donated the land for United Lodge's new temple on Baribeau Drive; served as chairman of the building committee; was active in raising money toward its construction; and built the finish for the new temple in his own woodworking shop. He also constructed an electronic organ for the temple.

Dr. Dionne was a member of the Cumberland County Medical Society, the Maine Medical Association, the American Medical Association, and in 1931 was licensed for surgery as a founding member of the American Board of Abdominal Surgery. His hobbies included a metal working shop, an electronics shop and photography.

Surviving are his wife, Mrs. Beatrice Dionne; three daughters, Mrs. Ann Favreau and Miss Donna Dionne, all of Brunswick, and Mrs. Carmen Morris of Chicago, Illinois; a sister, Mrs. Juliette Williams of Brunswick; three brothers, Dr. Bertrand Dionne and Raymond Dionne of Brunswick and Donald Dionne of Norway; four grandchildren and several nieces and nephews.

HAROLD S. BABCOCK, M.D.

1888-1973

Dr. Harold S. Babcock, 85, of Castine, Maine, died on November 12, 1973 following a long illness.

He was born in Hampden, Maine on August 31, 1888, son of John and Abbie Tribou Babcock.

A graduate of Hampden Academy, Dr. Babcock received his medical degree from Jefferson Medical College in Philadelphia in 1916. He interned at the Eastern Maine General Hospital in Bangor. In 1917, he came to Castine to fill in for Dr. Webster who was serving in France, and on the death of Dr. Webster, he remained in Castine and for 12 years with his wife operated a hospital in their home on Main Street. In 1929, the Castine Com-

munity Hospital was opened and from then until his retirement in 1959, due to ill health, he had been chief of staff.

He was an honorary member of the Hancock County Medical Society and the Maine Medical Association, receiving a 50-year pin in 1966 and a 55-year pin in 1971. Dr. Babcock served as Councilor for the Fifth District of the Maine Medical Association from 1943 to 1946.

Surviving are his wife, the former Martha Harris; one son, Philip of Castine; one granddaughter, Mrs. Philip Brookhouse of Lewiston; one grandson, Harold E. of Lexington, Massachusetts; a great-granddaughter; and several nieces and nephews.

GILBERT CLAPPERTON, M.D.

1905-1973

Dr. Gilbert Clapperton, 68, of Lewiston, Maine, chief anesthesiologist at the Central Maine General Hospital for many years, died on November 22, 1973.

He was born in Lewiston on November 16, 1905, son of John and Catherine Clapperton.

Dr. Clapperton had a successful career in music and on the RKO vaudeville circuit before returning to college to obtain his medical degree from Boston University School of Medicine in 1936. His vaudeville career, in which he appeared as a drummer, xylophonist and timpanist, followed his freshman year at Bates College. He returned to the college in 1929 and received his degree in 1932. While at Bates, he organized and conducted the Bates Bobcats, a dance-novelty orchestra, and also conducted the Little Symphony. In addition, he composed music and did the chorus music for the annual Greek Play.

His vaudeville career took him on a tour through New England, New York, Pennsylvania, Maryland, Ohio, to Asbury Park, New Jersey and to the Steel Pier at Atlantic City. He also appeared on numerous radio stations, and while at Bates earned the title of assistant director of music.

Following his music and vaudeville career and graduation from medical school, he came to Lewiston in 1937 as resident

physician at the Central Maine General Hospital, and was made chief of the Department of Anesthesiology in 1939. With the exception of service in World War II, Dr. Clapperton held that title until he retired in 1971 and became a member of the honorary and consulting staff.

He entered the military service in May 1942 and served with the 67th General Hospital at Taunton, England. He received the Bronze Star and a citation from the Medical Corps of the U.S. Army for meritorious service as anesthesiologist and officer in charge of the operating room from Dec. 5, 1942 to May 8, 1945.

On his return to Lewiston, Dr. Clapperton was elected in 1948 the first president of the then newly formed Maine Society of Anesthesiology.

Dr. Clapperton was a member of the Androscoggin County Medical Society, the Maine Medical Association, the American Board of Anesthesiologists, the American College of Anesthesiologists, the International Anesthesia Research Association, the American Society of Anesthesiologists, the Maine Society of Anesthesiologists and the New England Society of Anesthesiologists.

He is survived by his wife, the former Birdina Hunnewell of Lewiston.

News, Notes and Announcements

State of Maine Board of Registration of Medicine Physicians Licensed to Practice Medicine and Surgery in the State of Maine

Through Reciprocity

Ashby, Thomas M.; Barrett, John J.; Bever, Christopher T.; Bichay, Mounir A.; Black, Bradley C.; Busch, Inez L.; Cebrik, Michael M.; Cohen, Ralph L.; Conrad, James K.; Davidson, Gerald E.; Dolan, William C.; Dow, Richard W.; Durrani, Ayaz M.; Ferriter, William B.; Heck, Charles C.; Ho, Ching H.; Horie, Utako; Jauch, Robert J.; Kish, Gary; Kurland, Anthony M.; Lang, Anthony E.; Manson, Richard A.; McNeil, George N., Jr.; Metzger, Donald G.; Mitchell, Helen M.; O'Connor, Robert B.; Patch, Richard A.; Robinson, Terrance A.; Rozycki, Jan S.; Stover, John H., Jr.; and Taylor, J. Michael.

Professional Education for Physicians A Report

For many years, I have been interested in professional medical education. This year is no exception.

During the past 2 years, we at the Goodall Hospital in Sanford have had a most interesting educational program for the medical staff. Last year we had a series of 6 meetings. We met on the third Tuesday night of every month at 7:00 p.m. The program lasted one hour.

This year we are also conducting a series of 6 meetings, possibly more. These meetings last from 1 hour to 2 hours. They take place on alternating 3rd Tuesday and Thursday evenings starting at 7:00 p.m. We definitely have had no problem in securing topnotch men in the field.

It appears of interest to present you with our program for this series.

It is as follows*

October 18, 1973 — Thursday, 7:00 p.m.

Leonard Bushnell, M.D.
Beth Israel Hospital
Boston, Massachusetts

Subject — "Cardiopulmonary Resuscitation"

November 20, 1973 — Tuesday, 7:00 p.m.

Joseph K. Hurd, M.D.

Department of Gynecology

Lahey Clinic, Boston, Mass.

Subject — "Obstetrical and Gynecological Emergencies, Dx & Rx"

December 20, 1973 — Thursday, 7:00 p.m.

Charles Lipson, M.D.

Surgeon, Beth Israel Hospital, Boston, Mass.

Newton Wellesley Hospital, Newton, Mass.

Subject — "Electrolytes, Blood Gases and Parenteral Therapy"

January 15, 1974 — Tuesday, 7:00 p.m.

John W. Graef, M.D.

Director, Medical Emergency Services

The Children's Hospital Medical Center

Boston, Massachusetts

Subject — "Diagnosis and Treatment of Pediatric Emergencies"

February 21, 1974 — Thursday, 7:00 p.m.

P. Stefan Kraus, M.D.

Psychiatrist and Neurologist

Newton Wellesley Hospital

Newton, Massachusetts

Subject — "Common Psychiatric Problems, Diagnosis and Treatment"

March 19, 1974 — Tuesday, 7:00 p.m.

Lloyd Aiello, M.D.

New England Deaconess Hospital

Boston, Massachusetts

Subject — "The Eye in the Diagnosis of Systemic Disease"

MELVIN BACON, M.D.

President of Staff

Goodall Hospital

Sanford, Maine

*Supported by a grant from the Merck, Sharp & Dohme Postgraduate Program.

County Society Notes

ANDROSCOGGIN

The Androscoggin County Medical Association met at Steckino's Restaurant in Lewiston, Maine on October 18, 1973. The meeting was called to order at 8:00 p.m. by the President, Dr. Gilbert R. Grimes, with 33 members present. Guests for the evening were pharmacists, representatives of nearly all the local Lewiston-Auburn Pharmacies, as well as from surrounding communities.

The minutes of the September meeting were read. Dr. Paul M. Beegel wished to state in clarification of his written report regarding the Tri-County Health Planning Agency that he was very impressed with the general sincerity and high level of interest expressed by the Agency in assuring excellence of Health Care Delivery in the Tri-County area. He expressed his hopes that the Androscoggin County Medical Association will continue to provide guidance as needed in their deliberations. The minutes were then accepted as amended.

Correspondence included a letter of confirmation from the Maine Medical Association to Drs. Clapperton and Zanca's nomination to affiliate membership to the County and State Medical Associations. A letter from a life insurance company requesting more utilization of their "phone-in" system was read to the membership. Action was suggested on an individual basis as indicated.

Dr. Charles A. Hannigan reported on the progress in acquiring legal counsel on behalf of the Androscoggin County Medical Association. Preliminary arrangements will be presented at the December meeting.

President Grimes reported on the preliminary progress in revision of the Constitution and Bylaws of this Association. A discussion of the possibility of a special membership being extended to the Oral Surgeons in our community was held. There being no provision in either the State or County Association Bylaws for such membership, it was moved, seconded and voted that members in good standing are free to invite professionals, other than M.D.'s, at any time. The social expense incurred would be the responsibility of the professional, in lieu of a regular dues structure.

President Grimes appointed as nominating committee for 1974, Drs. Charles A. Hannigan, John W. Carrier, Mary T. Dycio and Jou S. Tchao.

In lieu of a scientific program, there was a very enlightening and informal discussion with our pharmacist colleagues concerning Federal and State Regulations concerning dispensing of drugs. The problem areas affecting both groups were openly discussed. The lively discussion was both informative and enlightening to all those present.

There being no further business, the meeting was adjourned at 9:30 p.m.

RICHARD M. SWENGEL, M.D., *Secretary*

AROOSTOOK

The spring meeting of the Aroostook County Medical Society was held at the Golden Dragon in Caribou, Maine on May 16, 1973. The meeting was opened at 8:10 p.m. by the President, Dr. William A. O'Brien. After the usual opening remarks, the minutes of the March meeting were read by the secretary and approved by the majority. There were 29 members present at the spring meeting.

Dr. Eric F. Nicholas of Mars Hill, alternate delegate to the Maine Medical Association, presented us a resumé of the recent interim meeting of M.M.A. that was held in April. A general discussion followed; the topic being continuing education and evaluation. Dr. Harry M. Helfrich, Jr. moved that the Aroostook delegates, at future meetings of M.M.A., vote in favor of accepting continuing education by each individual member. Motion was approved by the majority.

There was a general discussion started by the secretary, Dr.

Benoit Ouellette, concerning "Chiropractors." The general feeling of the assembly was "apathy" and "no concern," since it is not defined as a "science" nor known as a "medical practice." Also, all medical practitioners should be aware of the Chiropractor's pseudo-psychosomatic effect on sick bodies. The general consensus was that their x-ray practice should be totally banned, unless prescribed by an M.D.

The County Secretary, Dr. Ouellette, gave a brief exposé of what the P.L. H.R. I means to doctors and especially the PSRO regime, as politically and quickly voted in, in late October 1971 known as the "Bennett Amendment." Following a discussion, the secretary proposed the following resolution to members to vote on:

WHEREAS, the Professional Standards Review Organization is a political organization built by bureaucrats and controlled by bureaucrats; and

WHEREAS, PSRO will convert our present voluntary system of medical practice to a compulsory system; and

WHEREAS, PSRO members will have the right to harass medical practitioners about their practices; and

WHEREAS, PSRO being controlled by the Secretary of Health, Education, and Welfare, will not accomplish the objective intended — to promote efficient, economical, and quality health care; and

WHEREAS, PSRO will decrease the efficiency of physicians, rather than increase it, by forcing them to spend more time on paper work and reports to bureaucrats; and

WHEREAS, PSRO, being an administrative government program, will cause the cost of health care in the country to rise, rather than to level off, as it should; and

WHEREAS, PSRO, instead of increasing the supply of doctors, will remove many physicians from clinical medicine for administration purposes, thus defeating two of the program's goals; and

WHEREAS, PSRO will depersonalize health services; and

WHEREAS, PSRO will eventually pave the way for national health insurance and services; now

THEREFORE, BE IT RESOLVED, that the Maine Medical Association rejects the concept of the PSRO and urges its members not to cooperate in the implementation of Professional Standards Review under this program.

The proposed resolution was voted down, and furthermore, it was resolved that the Aroostook delegates to M.M.A. meeting in June 1973 vote for the PSRO law in its totality.

The next item on the agenda was the week-long "Diabetes Drive" in Maine. The Aroostook County Medical Society approved unanimously to support the drive.

Since May is the voting meeting, in preparation for delegates to represent Aroostook at the State of Maine Chapter, Drs. Aungst, Helfrich and Madigan were recommended by the President to nominate the future members of the executive branch of Aroostook County to be voted on. The future "Aroostook" executives elected were as follows:

President: Dr. Philip Pines, Limestone

Vice-President: Dr. Paul S. Hamlin, Presque Isle

Treasurer: Dr. Clyde I. Swett, Island Falls

Secretary: Dr. Benoit Ouellette, Fort Kent

Delegates to the M.M.A.: Drs. Eugene G. Gormley, Houlton and Eric F. Nicholas, Mars Hill

Alternate delegates to the M.M.A.: Drs. Rodrigue J. Albert, Fort Kent and Arthur D. Pendleton, Fort Fairfield

The out-going president, Dr. William O'Brien, as his last official act, introduced Mr. Frank Long, Union Mutual's Field Representative, to give us a general outline on how Medical Fees for Services was originated by Health, Education and Welfare, and how it is executed in the State of Maine. Mr. Long explained

- 1) How the state was divided into three areas and why it was, and
- 2) How and why prevailing fees for services work in each area.

After his explanation, the members present commented on the great disparity in Maine for fees for the same services in different areas. After the prolonged discussion, the Aroostook County Medical Society recommended that Union Mutual, the originator of the three area policy, abolish it and treat Maine as one single area. This would eliminate the great disparity in fee schedules in Maine.

The president then thanked the speakers, and asked the meeting to be adjourned.

Adjourned at 10:30 p.m.

The fall meeting of the Aroostook County Medical Society was held at the Golden Dragon in Caribou, Maine on October 17, 1973. The meeting was opened by the President, Dr. Philip Pines, by thanking all of the 27 members present for their interest shown in the Society and for the effort put forward by them to make the Society a better one.

Dr. Pines announced that with our contribution to the Society dues, and the untiring dedication on the part of Dr. Clyde Swett, treasurer of A.C.M.S., the County Medical Society Scholarship was raised to \$500.00 a year.

As requested by the President, the report of the last meeting in May was read and accepted.

The County Secretary was asked to give a report of the executive committee meeting of the M.M.A. held October 7, of this year.

After discussion of such group malpractice insurance for M.M.A., the Aroostook County Medical Society approved the motion of such a group program.

The Aroostook County Medical Society unanimously approved the M.M.A. resolution concerning PSRO, and will comply with such legislation as long as:

—Freedom of choice between physician and patient is respected,

—freedom of choice of mode of therapy is definite,

—that ability to maintain confidentiality of record be obeyed in totality,

—that liberal consideration of the welfare of the patient be not curtailed.

Concerning Chiropractors, the Aroostook County stands by their motion of the May meeting, "Chiropractic is not defined as a science and medical practitioners are aware of the Chiropractors' pseudo-psychosomatic effect on sick bodies." The general consensus was that their x-ray practice should be totally banned, unless prescribed by a Medical Doctor.

That which followed was a brief explanation of the T.V. program of Oct. 25, on P.B.S.N. (on the elderly). It was moved that the President will explore the possibility of sending representatives to the thirty minute discussion that follows this program.

The President read the letter of resignation of Dr. Clyde Swett from Island Falls, who has been treasurer of A.C.M.S. for 31 years. After an elocution concerning Dr. Swett's tremendous dedication to the cause of our Society, including the excessive work done as founder and continuous supporter of the A.C.M.S. Scholarship fund, the President recommended that something should be done by all members as a token of appreciation.

The resignation of Dr. Swett was accepted by the assembly.

A committee was then nominated to work on a commemoration plaque to be handed to Dr. Swett at a future meeting. Dr. Giberson was elected chairman of the committee, along with Drs. Curtin and Augst.

The President, along with the assembly's approval, requested Drs. Augst, Harrison and Curtin to present a new treasurer. Dr. Arthur Pendleton of Fort Fairfield was recommended and unanimously approved the new treasurer.

Dr. Pines presented the motion to change our scholarship fund from pre-med student to first year medical student. Motion was accepted.

Next was a discussion concerning our "Board of Censor" for A.C.M.S. To eliminate delay in application and censorship acceptance of future new members, it was recommended that members of the Board should be from the same locality. A new

Board was elected to take over the present Board, following their term of duty. Newly elected Board of Censors are as follows: Drs. Clement L. Donahue, Chairman, H. Douglas Collins and Daniel C. Curtin.

In line of old business, Dr. Pines recommended that an official committee should be named to work on our Society "Bylaws." Bylaws committee nominated were: Drs. Smith, Chairman, Madjid Yaghmai and Denis R. Mazerolle.

Dr. Curtin, as chairman of the Diabetes Drive, gave a resumé of the present drive. Due to the excessive task in organization and execution of the drive, Dr. Curtin recommended that we start now to prepare for next year's drive. The recommendation was approved and a committee was then elected. The committee members are Drs. Curtin, chairman, H. Douglas Collins and Minoru Wakana.

Meeting was adjourned at 10:00 p.m.

BENOIT OUELLETTE, M.D., *Secretary*

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The Journal of the Maine Medical Association

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Number 3

Childhood Lead Poisoning

Medical Review

TERRANCE J. SHEEHAN, M.D. and MRS. SUSAN R. GRAVEL

INTRODUCTION

In order to combat the problem of lead poisoning, public health officials must work in close cooperation with physicians and environmentalists. Children at risk must be identified through intensive screening programs and medically evaluated. Environments must be carefully investigated and repaired. The following discussion on lead poisoning was prepared to aid physicians who may not have sufficient information to diagnose and treat lead poisoning or who do not have ready access to current medical literature. The Maine State Public Health Laboratory has facilities for analyzing capillary blood samples, venous blood samples and urine samples from provocative chelation.

Lead poisoning is a serious and sometimes fatal disease which affects an estimated 300,000 American children each year. If undetected, lead poisoning may produce brain damage, behavioral problems, kidney disorders and blindness. Although the cause is known and the treatment well defined, lead poisoning is still one of the country's most critical pediatric problems. The problem is environmental, as well as medical, because the lead that poisons children usually comes from their own homes.

CAUSES

The most common cause of lead poisoning in children is the ingestion of lead paint chips or other materials containing lead. Lead water pipes, improperly glazed pottery, and car battery casings are also known hazards with regard to lead poisoning, but most cases have been traced to lead paint itself or plaster impregnated with lead paint.

Lead paint is found primarily in homes built prior to 1950, however, lead paint was available to the general public until December 31, 1972 and may

conceivably be found in newer homes. The purpose of using lead in paint was twofold: for a drying agent and a pigment. Lead in paint was largely replaced by titanium after 1950, however, the restriction of lead was purely voluntary on the part of paint manufacturers and not a Federal regulation. Therefore, up until the past year when Federal regulations prohibited greater than .05% lead by weight in household paint, paint with sufficient lead to cause poisoning (more than 1% lead by weight) was available to the public.

Obviously, children living in old, deteriorating, sub-standard homes are major suspects for lead paint poisoning, however, children living in old but well maintained homes may be exposed also. Not only can children in such homes chew on window sills and stair railings which have been coated with lead paint, but with the current popularity of purchasing old houses with plans to renovate, children are often exposed to dust and minute paint chips which settle on food, beverages, toys, and thumbs which go into mouths. Fumes from burning paint are also dangerously toxic.

Normal behavior in infants and small children includes oral exploration of almost any object they can reach and put in their mouths, and many children actually ingest non-food items such as paint chips. The habitual, purposeful ingestion of non-food substances is termed "pica." There are many unanswered questions regarding the normality of pica, but studies throughout the country have determined that approximately 60-80% of all children with increased blood lead levels have pica. Many experts have tried to relate pica behavior to both nutritional and psychological factors, however, considering the oral phase of normal childhood development, perhaps pica is simply a prolonged manifesta-

tion of the oral exploration of early childhood.

The fact that lead paint has a sweetish taste may contribute to a child's repeated ingestion of that particular substance more often than any other non-food item. The theory has been given that children become addicted to the paint, much the same as adults become addicted to cigarettes or alcohol. Cases have been documented in which children sneak paint chips while parents are out of sight because they know that a parent will stop their activity.

BODILY EFFECTS

Lead is of no known use in the human body. Small amounts of lead from air, water and food sources are regularly absorbed by the body, but the normal body functions continually eliminate most of the lead. Despite the natural elimination mechanism, however, there is a limit to how much lead the body can tolerate. The maximum permissible daily intake for children has been established at 300 micrograms. A child normally takes in an estimated 150 micrograms of lead per day from his regular diet and the air he breathes. Should he be exposed to food, water or air containing abnormally high amounts of lead, there is still a margin of safety before he reaches his maximum daily intake. However, small chips of paint no bigger than a thumbnail may contain up to 1000 micrograms of lead or more. Although approximately 90% of the normally ingested lead is excreted through the feces daily, lead in excess of the maximum daily intake cannot be excreted and will progressively accumulate in the body and result in lead poisoning. Therefore, children who have pica are in grave danger if their environment contains lead paint.

Lead occurs in the body in two chemical forms: the mobile diphosphate and the immobile triphosphate. The soluble mobile form of lead is found first in the blood, from which it is transferred to the soft tissues (mainly liver, kidney, brain and pancreas). It is this soluble form of lead that is most toxic, for it is this lead that inhibits essential enzyme systems. The immobile form of lead is found primarily in the epiphyseal portion of the long bones. Lead is relatively inactive when stored in the bone, however, sudden rapid growth, acidosis, fever or upper respiratory infection may mobilize lead from the bone at an unpredictable rate and quantity and result in extreme rises in blood lead levels accompanied by overt symptoms.

The best known adverse effect of lead is its inhibition of the activity of enzymes that are dependent on the presence of free sulfhydryl (SH) groups for their activity. Lead interacts with the sulfhydryl groups in such a way that they are not available to certain enzymes that require them. The clearest manifestation of this inhibitory effect is the disturbance it causes in the biosynthesis of heme. Heme

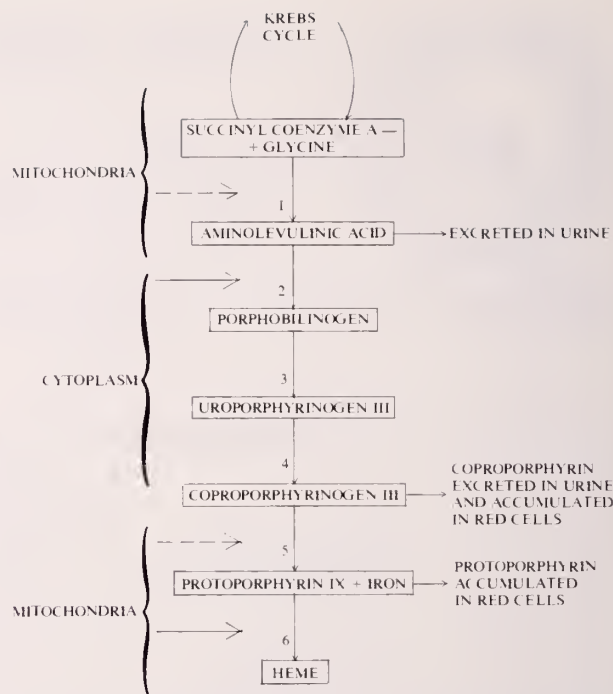


Fig. 1. BIOSYNTHESIS OF HEME, a constituent of hemoglobin, is inhibited by lead, resulting in accumulation of intermediates in the synthetic pathway. Of six steps in the pathway, the first and the last two take place in mitochondria, the others elsewhere in the cell cytoplasm. Lead inhibits two steps (solid arrows) and may inhibit two others (broken arrows).

combines with protein to form hemoglobin and heme is also an essential constituent of the cytochromes which play key roles in energy metabolism. The normal pathway of heme synthesis is shown in Fig. 1. Two of these steps are inhibited by lead and two others may be inhibited at higher lead concentrations. As one can see from Fig. 1, there is increased excretion of delta aminolevulinic acid and corprophyrins in lead poisoning. Lead is implicated specifically in the metabolism of delta aminolevulinic acid and in the final formation of heme from iron and protoporphyrin. Both of these steps are mediated by enzymes that are dependent on free sulfhydryl groups for their activity and are therefore sensitive to lead. The functional effect of this inhibition is anemia. The decrease in heme synthesis leads first to a decrease in the life span of red cells and later to a decrease in the number of red cells and in the amount of hemoglobin per cell. The bone marrow attempts to compensate for this anemia with an increase in the amount of reticulocytes, immature red cells, and basophilic stippled cells. Presence of stippled cells is the most characteristic finding in the blood of a patient with lead poisoning. Stippling represents remnants of cytoplasmic constituents of the red cell precursors.

Toxic levels of lead can also cause kidney and brain damage. These effects are not fully understood at present.

DIAGNOSIS

The Surgeon General of the U.S. Public Health Service has recommended that all children age 1-6 who live in deteriorating, poorly maintained housing be tested periodically for lead poisoning. Obviously, children below or above this age bracket may suffer from lead poisoning, but usually the child under one year is not mobile enough to regularly obtain large amounts of lead paint or similar material, and the child above six years of age has ceased to ingest non-food items and can be taught about the danger of lead. Children age 1-3 seem to be at greatest risk of lead poisoning by virtue of the fact that 85% of all reported cases of lead poisoning fall in this age group.

Repeated ingestion of lead substances may result in lead poisoning, but the accumulation of lead may not produce symptoms until three to four months after the onset of ingestion. Even when symptoms do become apparent, they are so insidious that many physicians who are not familiar with the disease may attribute them to other causes. The best defense against lead poisoning is a high index of suspicion. Environmental factors and a history of pica must be considered carefully when a child exhibits any one of the vague symptoms of lead poisoning. Siblings of children with lead poisoning should be tested also. Early clinical signs of lead poisoning include: nonspecific gastrointestinal symptoms (anorexia, constipation, nausea, stomach cramps) and/or central nervous system symptoms (irritability, fatigue, lethargy, clumsiness). Symptoms may be recurrent or transient and may possibly progress to more severe manifestations of the disease, including: persistent vomiting, convulsions and coma. One of the classic physical findings of lead poisoning; lead lines in the gums is rarely seen in children.

Due to increasing national concern over lead poisoning, many States and cities have instituted lead poisoning screening programs to detect and treat cases of childhood lead poisoning. The Maine Department of Health and Welfare has such a program. The preferred biological test for screening programs is a blood lead determination for which there are a variety of methods. A blood lead level indicates the amount of lead in a child's blood and alerts physicians to the possibility of lead poisoning and the need for further diagnostic tests. In cases where a physician suspects lead poisoning because of symptoms and patient history, a blood lead determination is usually the first test ordered.

There are two basic methods of blood collection for lead determinations: capillary (micro) and venous (macro). The capillary technique involves drawing a small amount of blood from a child's finger, heel or earlobe into a lead free capillary tube. The capillary test is an excellent screening tool and is sometimes used to monitor borderline or post

treatment blood lead levels. One drawback to the capillary blood test is the risk of surface contamination when working with such a small blood sample. For this reason, the capillary collection method is not recommended for diagnostic purposes when treatment is being considered. The venous technique involves drawing 3-5 ml. of blood from a child's vein into a lead free vacutainer or syringe. The venous test should be used to confirm capillary blood lead levels and for diagnostic purposes.

Interpretation of blood lead levels is a controversial subject. The Surgeon General of the U.S. Public Health Service recommends that a blood lead level of 40 ug/100 ml. or above, determined on two separate occasions, be considered evidence of undue absorption of lead and should be followed carefully. Blood lead levels may fluctuate from day to day depending on exposure to lead sources, thus two separate blood lead determinations are necessary to indicate whether or not a child is regularly absorbing lead. As previously mentioned, lead in blood is transferred to the soft tissues and eventually deposited in bone. Therefore, a positive blood lead level (40 ug/100 ml. or above) only indicates that a child has ingested lead recently enough that it is still in the blood stream. One cannot determine from a blood lead level how much lead is in soft tissue or bone. For this reason, it is recommended that blood lead values of 35 ug/100 ml. to 40 ug/100 ml. be carefully interpreted and followed. Recent studies have suggested that sequelae may develop even in the absence of overt symptoms; thus mild, asymptomatic cases of lead poisoning must be detected and treated as early as possible. Unfortunately, there is no concrete evidence which proves that brain damage or other problems result from mildly elevated blood lead levels; however, physicians should be aware that the possibility exists.

A compilation of the current literature on lead poisoning has resulted in the following interpretation of initial blood levels and subsequent diagnostic tests.

Less than 35 ug/100 ml. whole blood — within normal range.

35-39 ug/100 ml. whole blood — Indicates exposure to lead. Generally considered a borderline level; however, the total body lead burden may be greater than indicated by the blood.

Do a venous blood lead in one (1) month to confirm initial result.

If level is still between 35-39, child should be followed.

40-79 ug/100 ml. whole blood — indicates abnormal exposure to lead. A venous blood lead should be taken immediately to confirm the initial results. Symptoms are frequently absent in this group of patients. However, regardless of the presence of symptoms the diagnosis of lead poisoning should be considered.

The following tests are helpful in suggesting a diagnosis of lead poisoning. Physicians may have to limit tests according to laboratory facilities in their area. The Maine State Lead Poisoning Program recommends that any child whose blood lead level is in the range 40-79 ug/100 ml. whole blood on two successive tests should be considered a suggestive case of lead poisoning if any of the following conditions exist:

1. Urinary excretion in 24 hours of more than 1.0 micrograms of lead per milligram of Ca-EDTA administered intramuscularly at a dose of 50 milligrams per kilogram of body weight. Total dose must not exceed 1 gram of Ca-EDTA.
2. Serum delta — aminolevulinic acid (ALA) level of greater than 20 micrograms per 100 milliliters of whole blood using the Haeger-Aronson method.
3. Urinary output of coproporphyrin greater than 150 micrograms per 24 hours.
4. Urinary output of delta-aminolevulinic acid greater than 5 milligrams per 24 hours.
5. The presence of basophilic stippling of the red blood cells, "lead lines" in long bone x-rays (wrist, knee, ankle), and radio-opaque material in abdomen x-rays which confirms pica.

Although only positive findings are significant, negative findings do not rule out the possibility of lead poisoning. Environmental factors, history of pica and parental supervision must all be considered carefully when attempting to diagnose lead poisoning.

80 ug/100 ml. or above — indicates excessive exposure to lead. Do a venous blood lead immediately to confirm initial result. A confirmed blood lead level of 80 ug/100 ml. or above should be considered an acute case of lead poisoning, regardless of the presence or absence of clinical symptoms or ancillary tests. Immediate hospitalization and chelation treatment is indicated. The risk of encephalopathy at this level is great, and should encephalopathy develop, as many as 40% of these cases will result in

severe and permanent brain damage.

TREATMENT

Children in need of treatment for lead poisoning are most often hospitalized. Treatment may be administered on an outpatient basis, but environmental factors, parental concern, and geographical proximity to medical facilities must be carefully assessed when considering outpatient treatment.

Specific therapy for lead poisoning is aimed at chelating the lead ion and removing it from the body. The two most common chelating agents for lead intoxication are: Ca EDTA (calcium disodium edetate) and BAL (2,3 dimercaptopropanol).

Specific dosage and length of treatment must be individualized. Physicians unfamiliar with treatment procedures are advised to contact Dr. Terrence J. Sheehan who is the medical consultant for the Lead Poisoning Screening Program. Dr. Sheehan may be reached at: Doctors Park, Hospital Street, Augusta, Maine, 622-3734.

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Management of Hallux Valgus*

ARNOLD SOREN, M.D., D.O.S.**

Hallux valgus is characterized chiefly by lateral deviation of the great toe, medial deviation of the first metatarsal, and protrusion of the enlarged metatarsal head, bunion. It is an object of treatment as long as unphysiologic footwear is used in disregard of the form and function of the foot. The frequent flattening of the anterior arch of the foot and the associated splaying of the metatarsal bones are not considered in the design of the female shoes especially, and become disabling deformities.

In a good number of halluces valgi, congenital anomalies of the forefoot act as prime factors. They are: a.) varus deviation exceeding 10° of the first metatarsal, and b.) excessive length of the great toe. In these situations, the forefoot and great toe would be adequately accommodated, if the toebox of the shoe were broad and long enough. However, the point of most female shoes corresponds to the tip of the second toe. The great toe, therefore, has not sufficient stretch, and necessarily has to deviate lateralward where more length is available. If these shoes have in addition high heels, a great part of the body weight is shifted from the heel onto the forefoot, and the pre-existing deviation of the first ray of the foot is aggravated.

Since the congenital anomalies of the first ray of the foot and the splaying of the forefoot, which is mostly caused by constitutional laxity of the connective tissue, are often hereditarily transmitted, the incidence of hallux valgus shows a strong familial tendency.

In the greater number of acquired splaying of the metatarsal bones, the shift of load — from the heel onto the metatarsal heads — effected by the high heel of the female shoe increases the medial deviation of the first metatarsal bone (Figs. 1 and 2). Here too, the pointed toebox which simulates a narrow forefoot may be regarded as the foremost cause of lateral deviation of the great toe and of prominence of the medial portion of the metatarsal head (Figs. 1 and 2) with its exposure to friction. The frequent inflammations of the overlying bursa contribute to the impaired appearance of the forefoot.

The pain at the site of the bunion and the deformity of the forefoot promoted a variety of methods to attack the etiologic factors, and to bring improvement. Conservative management by the use of proper shoes with broad toebox and high metatarsal



Fig. 1. Halluces valgi with chronic bursitis. Skin incision indicated on right hallux.

pads provides adequate relief, especially if the leather over the bunion has been widened to prevent topical friction. However, the majority of the patients prefer correction of the deformity by operation.

In the surgical procedures, 153 listed by Verbrugge¹, the following principles are embodied: a.) excision of the exostosis of the metatarsal head,^{2,3} commonly applied in milder cases without additional deformity of the great toe; b.) osteotomy and realignment of the first metatarsal^{2,4,5} with optional excision of the exostosis of the metatarsal head, chiefly applied in marked varus deviation of the metatarsal or in adolescents; c.) transference of tendons or tenofascial flaps,^{6,7,8} employing mostly the tendon of adductor or abductor hallucis, combined with excision of the exostosis, and usually applied in middle age people; and d.) excision of the exostosis of the metatarsal head combined with resection of the first phalanx of the great toe,⁹ generally applied in patients of the older age group. Since every hallux valgus presents more than one component of deformity, the author has been using the following steps of technique to implement the maximum correction:

1. Incision of skin. The incision (Fig. 1) on the great toe starts on the dorsal aspect of the first phalanx, curves onto the prominence of the metatarsal head, and descends from here to the medial aspect of the metatarsal shaft.

2. Retraction of periosteum and joint capsule. Following the line of the skin incision, an incision is made in the periosteum of the first phalanx, the cap-

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Fig. 2. Roentgenogram of halluces valgi in Fig. 1.

sule of the metatarsophalangeal joint, and the periosteum of the first metatarsal shaft. The periosteum and the joint capsule are retracted.

3. Resection of the first phalanx. The phalanx is transversally divided in two; the proximal half is excised, and the remaining distal half is smoothed at the osteotomy site with a file (Figs. 3 and 5).

4. Excision of prominent part from metatarsal head and shaft. The exostotic portion of the metatarsal head including the dorsomedial distal part of the metatarsal shaft (Figs. 3 and 5) is removed as a wedge.

5. Lengthening of extensor tendon. If after resection of the first phalanx free mobility of the great toe is not sufficiently restored, the tendon of the extensor hallucis longus is lengthened Z-wisely.

6. Excision of subcutaneous bursa only in those cases in which recurrent effusions in the bursa indicate the presence of a markedly thickened bursal capsule. The latter presumably would not obliterate

even after removal of the underlying exostosis.

7. Interposition of capsular flap. If the periosteocapsular cover is thick enough, a proximally pedunculated flap is dissected from the cover's inner surface and is diverted into the resected metatarsophalangeal joint (Fig. 3). In this way a bridle is created which pulls the metatarsal head in adduction.

8. Reattachment of periosteocapsular cover. The reflected joint capsule and periosteum are sutured onto the distal half of the first phalanx with distributed tension to maintain the toe in plantar flexion and slight abduction.

9. Closure of wound. The skin edges are approximated. The initially curved skin incision is converted into a straight incision by bringing the great toe from adduction to axial alignment (Figs. 4 and 5).

10. Compression of the wound and immobilization of the great toe in straight sagittal alignment

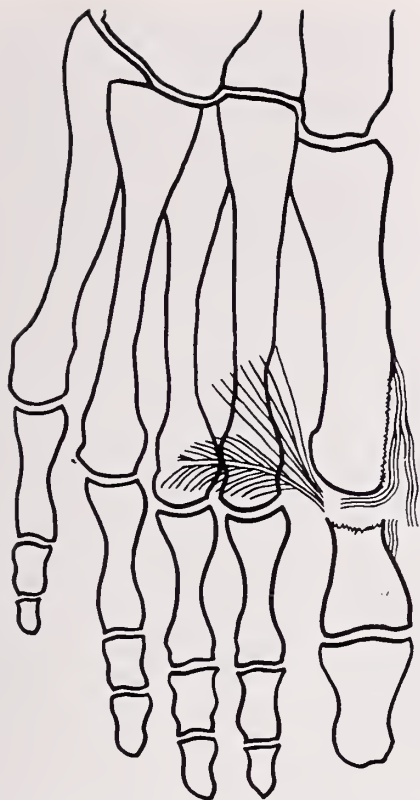


Fig. 3. Inner flap attached to adductor tendon; outer flap attached to periosteum of first phalanx.

and slight plantarflexion are secured by a snugly applied elastic bandage.

Ambulation exercises are started on the fourth postoperative day, and regular ambulation is resumed on the fourteenth to sixteenth postoperative day. In the aftercare, the patients are instructed in active and passive plantarflexion of the great toe. The patients are also urged to wear shoes with wide toebox, containing a broad metatarsal pad of foam rubber. Patients with sedentary occupations return to work one month after surgery, and patients whose occupations require standing return to work two months after surgery. Wearing of regular shoes is permitted at the earliest six months after surgery. Plantarflexion exercises of the great toes and all other toes are continued for a long period of time, because the attainment of sufficient plantarflexion is essential for a satisfactory result. Otherwise, pain in the forefoot continues despite correction of the deformity of the great toe.

Therefore, in the evaluation of the results following the described operation, the relief of pain in the metatarsophalangeal joint of the great toe and at the plantar aspect of the other metatarsal heads is considered an important criterion. Anatomical criteria are: a.) alignment of the great toe in the longitudinal axis of the first metatarsal bone and in proper relationship to the other toes, b.) absence of the dorso-



Fig. 4. Satisfactory correction of halluces valgus in Fig. 1.

medial enlargement of the metatarsal head, c.) disappearance of the soft tissue swelling overlying this enlargement, and d.) subsidence of inflammation of the skin. Functional requirements are: a.) full mobility in the metatarsophalangeal joint of the great toe, b.) ability to actively plantarflex the great toe, c.) ability to deploy the forefoot with adequate push-off, and d.) ability to reshape the metatarsal arch. Late roentgenograms are studied for: a.) axial alignment of the toe, b.) adequate resection of the first phalanx, c.) absence of a sufficiently large portion on the medial side of the metatarsal head, d.) presence of congruity and articular interspace between metatarsal head and phalanx, and e.) absence of osteophyte formation.

According to these criteria, evaluation of the late results has been carried out two to four years after operation of halluces valgus. The survey comprises 142 patients, 137 women and 5 men, between the ages of 34 to 76. Of these, 131 patients had operations involving both feet, and 11 patients had operations involving one foot. The indications for operations were: a.) persistent pain and recurrent bursitis at the bunion, b.) impaired function of the great toe, c.) inability to wear regular shoes, and d.) the cosmetically disturbing appearance of the great toe. The latter was not accepted as the prime indication.

At operation on 8 patients, lengthening of the extensor tendon was considered unnecessary. These patients remained with short extensor tendons. Although the disappearance of the bunion constituted an improvement, the lack of plantarflexion of the great toe and the frequent metatarsalgia marred the outcome.

Of the other 134 patients, not all cooperated in the postoperative care. These and some other patients had poor results after the operation of halluces valgus. The causes of failure in 17 patients are indicated in Table 1.

In 117 patients, the results were satisfactory, both



Fig. 5. Roentgenogram of halluces valgi in Fig. 4.

TABLE I

CAUSES OF POOR RESULTS IN 17 PATIENTS

5 patients, stiffness of great toe due to insufficient resection of first phalanx
2 patients, improper weightbearing on metatarsal arch, and metatarsalgia following complete resection of metatarsal head
3 patients, recurrence of deformity following delayed healing of wound
2 patients, contracture in hypercorrection due to lack of exercises
2 patients, recurrence of deformity due to lack of exercises
3 patients, recurrence of deformity due to improper footwear

from the morphologic and functional point of view. According to the criteria established, 29 excellent results and 88 good results were noted. The patients were pleased with the appearance of the forefoot, because the enlargement of the metatarsal head and the inflamed overlying tissues (Figs. 1 and 4) were removed, and the faulty position of the great toe

was corrected (Figs. 1, 2, 4 and 5). The soreness at the metatarsal head subsided. The great toe could be properly flexed plantarward, and the push-off on walking was improved. The weightbearing was shifted onto the first metatarsal head and great toe, and the arch of the forefoot gradually resumed plantar concavity. Subsequently, the metatarsalgia regressed. Eventually, regular shoes were worn.

SUMMARY

Operative management of hallux valgus was carried out by a procedure which comprised excision of a sufficiently large portion of the first phalanx and metatarsal head, lengthening of the extensor tendon, interposition of a capsular flap, and attachment of the periosteal-capsular cover with distributed tension.

Impairment of use and persistent soreness were considered more important in the indication for operation of hallux valgus than the cosmetic demands

Continued on Page 64

Observations on the Diagnosis and Treatment of Sarcoidosis*

HAROLD L. ISRAEL, M.D.**

Two decades ago the constant concern in diagnosis of sarcoidosis was exclusion of tuberculosis and the principal concern in corticosteroid treatment was the development of tuberculosis. The precipitous decline in tuberculous infection has minimized both fears. The clinical, radiologic and laboratory characteristics of sarcoidosis permit accurate differentiation from the usual forms of tuberculosis, and experience in differentiating the atypical forms of two diseases has made errors infrequent. Equally rare at present is the occurrence of tuberculosis as a complication of sarcoidosis. Among almost a thousand patients under observation and treatment in the past decade, only two have developed culturally proven tuberculosis.

This simplification of the diagnostic and therapeutic problem, however, has unfortunately not resulted in greater unanimity of diagnostic and therapeutic approaches. Hopes for development of a specific immunologic test for sarcoidosis have not yet been fulfilled, and marked variations persist in use of biopsy procedures. There have been pleas for eliminating biopsy as a requirement for diagnosis¹ and for thoracotomy in all cases of suspected sarcoidosis.²

Winterbauer, Belic and Moores¹ found that bilateral hilar adenopathy in asymptomatic patients with negative physical examinations or in association with erythema nodosum or uveitis was invariably the result of sarcoidosis; biopsy confirmation of the diagnosis in such cases was unnecessary. Neoplastic adenopathy was observed only in patients who were symptomatic.

Our own experience with the differentiation of sarcoidosis and lymphoma accords with that of Winterbauer et al. Five patients referred to us as sarcoidosis proved to have Hodgkin's disease; all were symptomatic and all had had biopsies demonstrating granulomas. In one patient, the pathologic changes of Hodgkin's disease had been mistaken for sarcoidosis but in the other 4 instances hepatic or lymph node biopsies had indeed shown epithelioid granulomas typical of sarcoidosis. Thus, these errors in diagnosis were the result not of failure to secure biopsies, but of misleading histologic information.

Kent et al² have advocated an aggressive approach, arguing that thoracotomy was essential to exclude tuberculosis in all cases of suspected sarcoidosis. This conclusion was based on the study of 30 patients with evidence of non-caseating granulomas in peripheral nodes; cultural evidence of mycobacterial infection was reported in 18, only 6 of whom reacted to intermediate strength PPD. Such a discordance between bacteriologic and skin test results have been observed by no other investigators, and their conclusion should not be accepted until confirmation by other laboratories is reported. Kveim reactions were observed in 4 of their patients, who may well have had glandular tuberculosis rather than sarcoidosis.

It is clear that demonstration of epithelioid granulomas is not the proof of sarcoidosis, since similar lesions occur in Hodgkin's disease as well as fungal and mycobacterial infections. More convincing than pathologic evidence is the demonstration of massive hilar lymph nodes which disappear without treatment. As Scadding³ has pointed out, "some combinations of clinical, radiological and other features, especially if several organs or systems are involved, are so characteristic that they justify a clinical diagnosis of sarcoidosis with little risk of error; and in such circumstances even this small risk may be eliminated by the observation of a typical histologic pattern in tissue removed for biopsy from a single site. In other cases with less characteristic features, biopsy from a single site even though it shows a typical pattern may be insufficient to establish the diagnosis beyond doubt." It is a common error to overdo biopsies in cases where they are unnecessary, while not enough are secured in atypical extrathoracic cases.

Although laboratory tests are extensively employed in an attempt to establish the diagnosis of sarcoidosis, their value is in fact limited.⁴ The blood count may show leukopenia with blood counts of 4,000 being more frequent than in a normal population. Eosinophilia of 4 to 6% also is common. No other hematologic abnormalities are characteristic of sarcoidosis. Although emphasis has been given hypercalcemia, the determination of serum calcium or urinary calcium excretion is rarely of diagnostic assistance. Calcium metabolism is abnormal chiefly in patients with severe disseminated sarcoidosis in whom the diagnosis is obvious; disordered calcium metabolism is almost

*Presented at the annual meeting of the Maine Thoracic Society, Sept. 19, 1973.

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never encountered in patients with limited or unusual manifestations that present a problem in diagnosis. Serum protein abnormalities, increased gamma globulin with a tendency to increase of IgG and IgA immunoglobulins, occur in sarcoidosis, particularly in black patients.⁵ The differences are inconstant and so non-specific that routine measurement of these values is useless for diagnostic purposes. Although disordered cell mediated immunity is a characteristic feature of sarcoidosis, study of this defect is of little diagnostic value. Application of a battery of common antigens reveals that 50% of patients with sarcoidosis react to at least one antigen^{6,7} and neither demonstration of hyperergy or anergy adds substantial support to the diagnosis of sarcoidosis. The value of performing tuberculin tests with intermediate and 2nd strength preparation in all cases of suspected sarcoidosis is to exclude tuberculosis rather than to support a diagnosis of sarcoidosis.

Although it might be anticipated that the impairment of delayed hypersensitivity reactions would make the tuberculin reaction unreliable in sarcoidosis, our experience has been⁸ that every patient with sarcoidosis who developed tuberculosis showed a positive tuberculin reaction; when tuberculosis complicates sarcoidosis there is sufficient antigenic stimulation to evoke a tuberculin reaction.

The Kveim test has not proven valuable as a specific test in cases that present a diagnostic problem. The Kveim test is most consistently positive in typical cases of sarcoidosis characterized by persistent and massive adenopathy or erythema nodosum in which the diagnosis is quite secure on a clinical basis.⁹ In atypical forms of sarcoidosis with little or no adenitis, the Kveim reaction is usually negative. Johns¹⁰ has reported that 90% of cases of sarcoidosis without prominent adenopathy had a negative Kveim reaction. We have recently completed a study of cases of hepatic granulomatosis many of which appeared to be the result of sarcoidosis; the Kveim test was usually negative in these cases.¹¹ On the other hand, false-positive reactions occur with many antigens and a positive Kveim test cannot be relied upon for the diagnosis of sarcoidosis in the absence of typical clinical features. It is in the diagnosis of atypical forms of sarcoidosis that a specific test would be most useful, but in these circumstances the Kveim reaction in its present form is undependable.

Thus we return to the need for tissue biopsies. With readily accessible material such as cutaneous sarcoids, subcutaneous nodules, and palpable lymph nodes, excision is safe and rarely disfiguring. When no abnormalities are visible or palpable, resort may be had to a variety of other techniques all with virtues and defects: mediastinoscopy (highest yield, but cosmetically objectionable); lung bi-

opsy (high yield, but not without complications), needle aspiration of liver (epithelioid granulomas are found in 5% of cases of Hodgkin's disease).

The most promising approach to uniformity in the diagnostic approach to sarcoidosis is the development of an in-vitro diagnostic test. Several investigators^{12,13,14} have reported that migration inhibition of sarcoidal lymphocytes by Kveim test materials parallels the in vivo Kveim reaction. Unfortunately, inhibition of cell migration has also been observed in other diseases including tuberculosis and dermatitis herpetiformis. Although the in vitro procedure shares the limited specificity of the in vivo test, it has many advantages — obviating the need for biopsies, avoiding disputes in histologic interpretation, permitting administration of corticosteroid therapy. Isolation of active and specific factors in Kveim test materials should permit wide utilization of macrophage migration inhibition as a rapid and safe test for sarcoidosis.

TREATMENT

In many patients, sarcoidosis is so mild and transient that it would have been undiscovered except for a routine chest x-ray. Patients with erythema nodosum may be acutely ill, but also have a good prognosis; clearing is usually rapid and progression infrequent. On the other hand, sarcoidosis is fatal in 5 to 8% of patients and causes severe respiratory, cardiac, hepatic or cutaneous damage in another 20%. In between are patients whose disease fluctuates for years, and others who have chronic hilar adenopathy which may last for decades with no impairment of health. Based on the prognostic considerations just mentioned, most physicians had arrived at the conclusion that only a minority of patients with sarcoidosis require treatment. The consensus was that asymptomatic patients with hilar adenopathy should not be treated, and that corticosteroids should be given patients ill with dyspnea, fever or other disabling symptoms. The area of disagreement has been a narrow one, restricted to occasional patients whose chest roentgenograms showed progressive infiltration while the patient was free of symptoms and had minimal or no evidence of impairment on respiratory function tests. There is divergence of practice in this type of case since some physicians use corticosteroids in the hope of averting pulmonary fibrosis, while others who believe that corticosteroids has no effect on the ultimate outcome of the disease would in these circumstances withhold therapy.

In the past year, four reports appeared which indicate that there is still wide variation in the use of corticosteroid treatment. A report by Thygesen and Viskum¹⁵ in Copenhagen indicated that only 10% of their patients were treated with corticosteroids. James and Turiaf, in a report¹⁶ on sarcoidosis in London, and Paris, demonstrated a con-

TABLE I

INTERNATIONAL VARIATION IN USE OF
CORTICOSTEROIDS IN SARCOIDOSIS

Investigator	City	Percentage treated
Thygesen & Viskum	Copenhagen	10%
James	London	34%
Israel, Fouts & Beggs	Philadelphia	38%
Turiaf	Paris	68.5%
Brun	Lyons	100%

siderable divergence in practice for only 33% of James's patients received steroids while 68% of Turiaf's patients were so treated. Brun has urged¹⁷ that all patients with sarcoidosis receive corticosteroids in the belief that this will avert fibrotic change (Table I).

In a Philadelphia controlled study¹⁸ of the long term effects of prednisone therapy, observation of 47 patients who had originally received placebo revealed that 38% were subsequently treated with prednisone. It is interesting that the proportion of black patients in Philadelphia judged to require corticosteroids so closely approximated the percentage of patients, predominantly white, treated in London.

Although benefit has been claimed for a variety of drugs, ranging from antimalarials to immunosuppressives, none is as consistently effective as the corticosteroids. These consistently reduce fever, arthralgias, myalgia, uveitis, correct disordered calcium metabolism and cardiac arrhythmias, improve pulmonary function, etc. However, in some patients progression of disease occurs despite the symptomatic improvement, and it is doubtful whether corticosteroids actually avert fibrosis in this disease.

When prednisone is administered for symptomatic palliation, high doses are rarely required. Daily dosage of 15 mgm. or less is usually adequate, but treatment may be required for several years in chronic cases. Doses as small as 5 to 10 mgm. daily are often sufficient. Westerhof et al¹⁹ have shown that even very low doses of prednisone enhance total corticosteroid activity, which would account for their therapeutic value.

In the past, tuberculosis was regarded as such a frequent sequel to sarcoidosis that the practice was widely recommended of giving prophylactic isoniazid to patients with sarcoidosis treated with steroids. Our own experience indicated that tuberculosis was an infrequent complication and hence we have not used isoniazid in patients with a negative tuberculin reaction. None of our patients has developed tuberculosis as a consequence of corticosteroid therapy and we believe it unnecessary to give isoniazid except to the small number of patients who are tuberculin reactors.

SUMMARY

There has been growing acceptance of the practice of making a clinical and radiologic diagnosis of sarcoidosis in asymptomatic patients with typical features. If symptoms are present, or if other indications for corticosteroid therapy exist, biopsy for histologic and microbiologic study is advisable. In patients with unusual manifestations, multiple tissue biopsies should be utilized to establish that systemic granulomatosis is present. Although there is no medication that significantly reduces the likelihood of fibrosis, about a third of patients with sarcoidosis require palliative treatment. Use of corticosteroids in a greater proportion is unwarranted, while restriction of their use to a smaller fraction means that patients are being deprived of important benefits.

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Better Pre-Hospital Emergency Services Through Emergency Care, Inc.

PAMELA P. BENSEN, M.D. and C. BRUCE WRIGHT*

An observable need to upgrade and coordinate existing pre-hospital emergency services in the Lewiston-Auburn area led to the establishment of Emergency Care, Inc. nearly two years ago. Originally planned for pre-hospital coronary care, ECI directors broadened the scope to all emergency calls that require hospital attention.

Officials of Tri-County Health Planning Agency in Lewiston and John Brennan, then administrative assistant to the Auburn police chief, came up with the original idea for improving pre-hospital coronary care. They worked on basic plans and encouraged the involvement of representatives of a dozen or so health and safety officials on the ECI board. An organizational meeting was held July 18, 1972, and incorporation was granted a little over a year later.

As probably the first such broad-based organization for emergency care coordination in the State, ECI has gone through a series of starts and stalls. But it is now emerging as an important coordinating unit for better planning, cooperation and knowledge at all levels of emergency care.

Simply stated, the goal of Emergency Care, Inc. is to help develop cooperative plans, to coordinate and to improve pre-hospital emergency care to best serve area residents. Although ECI is still very much in its growing stages, it has established priorities and is working on them. Also, Androscoggin Civil Defense, represented on the organization's board, is well underway in the training of Emergency Medical Technicians.

The establishment of Emergency Care, Inc. is justified medically because of the obvious need and the fact ECI is concerned with coordinating all associated emergency care efforts and services. Hopefully, this will avoid duplication of service and result in doing what is necessary as quickly as possible. In this way, we can get qualified emergency service directly to the patient and assure continuity of care through to the hospital Emergency Department.

Emergency Care, Inc. is proof that an important medical program can be developed through cooperative community effort. The board of directors is composed of a greatly diversified group of interested persons united for a common cause: to set up a model system of emergency medical services to

give the best possible patient care, without delay, from onset of emergency to hospital treatment.

The diversity of special interests and talents among ECI board members gives the organization strength. An impressive roster of health and safety officials includes top personnel from police and fire departments, ambulance services, hospitals, civil defense, tri-county health services and an attorney. It includes specialists in hospital administration, public relations and education, cardiology, emergency care, plans and training, communications and transportation. The success of Emergency Care, Inc. lies in effectively using and combining these talents.

TRAINING AND PLANNING

Training and planning are progressing concurrently. An Emergency Medical Technicians' course is offered by Androscoggin Civil Defense at Central Maine Vocational Technical Institute at least once a year. This is for persons likely to respond to an emergency call: ambulance attendants, firemen, policemen, and civil defense workers.

Nearly 30 individuals successfully completed the 81-hour EMT course last fall. This training program meets Department of Transportation requirements, and graduates are better able to provide on the spot emergency medical services and care. Although Androscoggin CD furnished most of the instruction, physicians and other health specialists helped as needed.

Along with the training is the need of improved planning and obtaining proper equipment for emergency vehicles. ECI conducted surveys to determine what each vehicle carried and recommended supplementary equipment for better service and patient care.

GOALS AND PRIORITIES

In November, the Goals and Priorities Committee report was accepted. It set the future course clearly for Emergency Care, Inc., and ECI is working toward these specific objectives:

Public education — who to call in an emergency, what services are available, how they are handled, how best to use the emergency services system.

Central dispatch — determining present and future dispatch needs, including investigation

Continued on Page 68

*St. Mary's General Hospital, Lewiston, Maine 04240.

Sign of a cold* sufferer Time for Ornade®

**Fast relief of nasal congestion
and hypersecretion*
with convenient b.i.d. dosage.**

Before prescribing, see complete prescribing information in SK&F literature or *PDR*. The following is a brief summary.

Indications

Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows:

Possibly effective: For relief of upper respiratory tract congestion and hypersecretion associated with vasomotor rhinitis and allergic rhinitis, and for prolonged relief.

Lacking in substantial evidence of effectiveness: For relief of nasal congestion and hypersecretion associated with the common cold and sinusitis.

Final classification of the less-than-effective indications requires further investigation.

Contraindications: Hypersensitivity to any component; concurrent MAO inhibitor therapy; severe hypertension; bronchial asthma; coronary artery disease; stenosing peptic ulcer; pyloroduodenal or bladder neck obstruction. Children under 6.

Warnings: Caution patients about activities requiring alertness (e.g., operating vehicles or machinery). Warn patients of possible additive effects with alcohol and other CNS depressants.

Usage in Pregnancy: In pregnancy, nursing mothers and women who might bear children, weigh potential benefits against hazards. Inhibition of lactation may occur.

Effect on PBI Determination and I^{131} Uptake: Isopropamide iodide may alter PBI test results and will suppress I^{131} uptake. Substitute thyroid tests unaffected by exogenous iodides.

Precautions: Use cautiously in persons with cardiovascular disease, glaucoma, prostatic hypertrophy, hyperthyroidism.


Adverse Reactions: Drowsiness, excessive dryness of nose, throat or mouth; nervousness; or insomnia. Also, nausea, vomiting, epigastric distress, diarrhea, rash, dizziness, weakness, chest tightness, angina pain, abdominal pain, irritability, palpitation, headache, incoordination, tremor, dysuria, difficulty in urination, thrombocytopenia, leukopenia, convulsions, hypertension, hypotension, anorexia, constipation, visual disturbances, iodine toxicity (acne, parotitis).

Supplied: Bottles of 50 capsules.

SK&F Smith Kline & French Laboratories
Division of SmithKline Corporation, Philadelphia, Pa. 19101

Each Spansule® capsule contains 8 mg. Teldrin® (brand of chlorpheniramine maleate); 50 mg. phenylpropanolamine hydrochloride; 2.5 mg. isopropamide, as the iodide.





The irritations of man's day are often reflected in his gut.

The causes of irritable colon and the diarrheal symptoms that often accompany it can be as diverse as the systemic and emotional irritations man is faced with daily.

Although the mucoid nature of stools and the occurrence of diarrheal episodes coincident with times of emotional stress may be valuable clues to the functional nature of the disorder, irritable colon must often be diagnosed by exclusion. Such diagnostic exploration takes time. Discovery of the nature of any emotional problems may take more. During that time, Lomotel® is an ideal agent for controlling diarrheal symptoms.

Lomotel tablets are small, easy to carry and easy to take. They act promptly and effectively. Secondary effects are relatively infrequent and, once the first force of the diarrhea is controlled, maintenance is frequently effective on as little as one fourth of the initial dosage.

These same characteristics make Lomotel useful in controlling the diarrhea associated with gastroenteritis, antibiotic therapy and acute infections.



telegram

Lomotil[®]

TABLETS/LIQUID

Each tablet and each 5 ml. of liquid contain:
diphenoxylate hydrochloride . . . 2.5 mg.
(Warning: May be habit forming)
atropine sulfate 0.025 mg.

takes care of the gut issue
in irritable colon

IMPORTANT INFORMATION: This is a Schedule V substance by Federal law; diphenoxylate HCl is chemically related to meperidine. In case of overdose or individual hypersensitivity, reactions similar to those after meperidine or morphine overdose may occur; treatment is similar to that for meperidine or morphine intoxication (prolonged and careful monitoring). Respiratory depression may recur in spite of an initial response to Nalline® (nalorphine HCl) or may be evidenced as late as 30 hours after ingestion. LOMOTIL IS NOT AN INNOCUOUS DRUG AND DOSAGE RECOMMENDATIONS SHOULD BE STRICTLY ADHERED TO, ESPECIALLY IN CHILDREN. THIS MEDICATION SHOULD BE KEPT OUT OF REACH OF CHILDREN.

Indications: Lomotil is effective as adjunctive therapy in the management of diarrhea.

Contraindications: In children less than 2 years, due to the decreased safety margin in younger age groups, and in patients who are jaundiced or hypersensitive to diphenoxylate HCl or atropine.

Warnings: Use with caution in young children, because of variable response, and with extreme caution in patients with cirrhosis and other advanced hepatic disease or abnormal liver function tests, because of possible hepatic coma. Diphenoxylate HCl may potentiate the action of barbiturates, tranquilizers and alcohol. In theory, the concurrent use with monoamine oxidase inhibitors could precipitate hypertensive crisis.

Usage in pregnancy: Weigh the potential benefits against possible risks before using during pregnancy, lactation or in women of childbearing age. Diphenoxylate HCl and atropine are secreted in the breast milk of nursing mothers.

Precautions: Addiction (dependency) to diphenoxylate HCl is theoretically possible at high dosage. Do not exceed recommended dosages. Administer with caution to patients receiving addicting drugs or known to be addiction prone or having a history of drug abuse. The subtherapeutic amount of atropine is added to discourage deliberate overdose; strictly observe contraindications, warnings and precautions for atropine; use with caution in children since signs of atropinism may occur even with the recommended dosage.

Adverse reactions: Atropine effects include dryness of skin and mucous membranes, flushing and urinary retention. Other side effects with Lomotil include nausea, sedation, vomiting, swelling of the gums, abdominal discomfort, respiratory depression, numbness of the extremities, headache, dizziness, depression, malaise, drowsiness, coma, lethargy, anorexia, restlessness, euphoria, pruritus, angioneurotic edema, giant urticaria and paralytic ileus.

Dosage and administration: Lomotil is contraindicated in children less than 2 years old. Use only Lomotil liquid for children 2 to 12 years old. For ages 2 to 5 years, 4 ml. (2 mg.) t.i.d.; 5 to 8 years, 4 ml. (2 mg.) q.i.d.; 8 to 12 years, 4 ml. (2 mg.) 5 times daily; adults, two tablets (5 mg.) t.i.d. to two tablets (5 mg.) q.i.d. or two regular teaspoonfuls (10 ml., 5 mg.) q.i.d. Maintenance dosage may be as low as one fourth of the initial dosage. Make downward dosage adjustment as soon as initial symptoms are controlled.

Overdosage: Keep the medication out of the reach of children since accidental overdose may cause severe, even fatal, respiratory depression. Signs of overdose include flushing, lethargy or coma, hypotonic reflexes, nystagmus, pinpoint pupils, tachycardia and respiratory depression which may occur 12 to 30 hours after overdose. Evacuate stomach by lavage, establish a patent airway and, when necessary, assist respiration mechanically. Use a narcotic antagonist in severe respiratory depression. Observation should extend over at least 48 hours.

Dosage forms: Tablets, 2.5 mg. of diphenoxylate HCl with 0.025 mg. of atropine sulfate. Liquid, 2.5 mg. of diphenoxylate HCl and 0.025 mg. of atropine sulfate per 5 ml. A plastic dropper calibrated in increments of 1/2 ml. (total capacity, 2 ml.) accompanies each 2-oz. bottle of Lomotil liquid.

SEARLE Searle & Co.
San Juan, Puerto Rico 00936

Address medical inquiries to:
G. D. Searle & Co., Medical Department
Box 5110, Chicago, Illinois 60680

Integument!

Our skin—the human integument—covers us, defines us, protects us. But skin is subject to cuts, burns, abrasions. And infections. Neosporin Ointment fights infection by providing broad antibacterial action against susceptible skin invaders. It contains antibiotics that are rarely used systemically, reducing the risk of sensitization.

INDICATIONS: Therapeutically, used as an adjunct to appropriate systemic therapy for topical infections, primary or secondary, due to susceptible organisms, as in:

- infected burns, skin grafts, surgical incisions, otitis externa
- primary pyodermas (impetigo, ecthyma, sycosis vulgaris, paronychia)
- secondarily infected dermatoses (eczema, herpes, and seborrheic dermatitis)
- traumatic lesions, inflamed or suppurating as a result of bacterial infection.

Prophylactically, the ointment may be used to prevent bacterial contamination in burns, skin grafts, incisions, and other clean lesions. For abrasions, minor cuts and wounds accidentally incurred, its use may prevent the development of infection and permit wound healing.

CONTRAINDICATIONS: Not for use in the external ear canal if the eardrum is perforated. This product is contraindicated in those individuals who have shown hypersensitivity to any of the components.

PRECAUTION: As with other antibiotic preparations, prolonged use may result in overgrowth of nonsusceptible organisms and/or fungi. Appropriate measures should be taken if this occurs. Articles in the current medical literature indicate an increase in the prevalence of persons allergic to neomycin. The possibility of such a reaction should be borne in mind.

Complete literature available on request from Professional Services Dept. PML.

NEOSPORIN[®] Ointment

(POLYMYXIN B-BACITRACIN-NEOMYCIN)

Each gram contains: Aerosporin[®] brand Polymyxin B Sulfate 5,000 units; zinc bacitracin 400 units; neomycin sulfate 5 mg. (equivalent to 3.5 mg. neomycin base); special white petrolatum q.s. In tubes of 1 oz. and ½ oz. and ¼ oz. (approx.) foil packets.



Burroughs Wellcome Co.
Research Triangle Park
North Carolina 27709

Graphics in Maine Hospitals

SUSAN BRECK SMITH*

All hospitals, and particularly large ones, face internal traffic problems today. Not only must people be steered off highways to hospital grounds, but they must be directed to their individual destinations within the hospital. Time is lost to Doctors and hospital staff, perhaps more than one hour a day in directing, leading and guiding the lost. The confusion is no less trying for the visitor. Suppose that after locating the hospital area, he finds its buildings large and dispersed, and its parking lots vaguely marked. His may not be an emergency, yet he may well be confused and distraught. If he is illiterate, or even fluent in English, he is sure to be troubled. Add to this his haziness about medical terminology. Does the word 'Pediatric' suggest children to the layman? Not at all. If it suggests anything at all, it is more likely to be 'feet.'

The end result is that hospital visitors seek an all-knowing Information Desk, then hope to follow its directives, which they constantly reinforce by stopping hospital workers and asking again anew.

PROGRESS IN HOSPITAL SYMBOLOGY

A few American hospitals have devised limited schemes for the self-direction of visitors. The U. S. Government hospital at Sandia, New Mexico has colored zones that one may follow through halls for distances up to 400 yards. These lead along floors or ceilings and are mildly stimulating as guides, and about 60 percent reliable if supplemented by questions when the visitor comes to a dead end at some broom closet. There is a limited use of graphic symbols in New York City hospitals located in non English speaking neighborhoods. No American hospital is entirely color-coded or uses fixed systems of symbols to indicate its departments. There is nothing comparable to the highway symbols seen on European and Mexican roads to give directions or to show steep slopes, detours or standard danger.

In the past 5 years, Mexico City has led the way in hospital graphics, largely due to the work of the author, a Maine girl who went to Mexico City to do graphics and art work for the 1968 Olympic Games, and has expanded her public direction techniques into patient and visitor assistance symbols for Mexican hospitals. The author has set up a system of graphic symbols throughout the Social Security hospitals in Mexico, in 2 private clinics, and in IMAN, the largest children's hospital in Latin America. The buildings of the children's hospitals



*President, Hospital Graphics, Box 821, Augusta, Maine 04330.



are all color-coded as to floors and as to nurses or attendants' uniforms. The children are amused and reassured by pleasant symbols, identifying the medical specialties under which they are being treated. For example, Ophthalmology is indicated by a smiling owl with one bandaged eye. Visitors find their way with the aid of these graphics and time of hospital personnel is not consumed.

The Maine Medical Center in Portland, Maine has recently completed a color-coded graphic project to direct patients and visitors. Under this plan, signs leading from highways to the medical center will be standardized. The hospital is divided into 5 different color areas. The department an individual seeks will be located within one of these colors and appropriately signed. Colored arrows and symbols will lead the visitor to his desired location. Following the author's dictum instruction will always be in 3 forms: word, color and symbol, since even a literate visitor may be color blind.

HOSPITAL GRAPHICS TOMORROW

International highway departments all point to good acceptance of their standardized road symbols over the past ten years. The author believes that 50 symbols should be agreed upon by all health services. Those the author has already developed for Mexican hospitals form a good start and will be used extensively. It would increase confusion if each hospital or Service set out to devise its own. Health authorities under the United Nations could best determine and promulgate such symbols. Every hospital should note along nearby highways and superhighways the best approaches to it, the location of its parking lots, and of its emergency and out-patient entrances.

Problems of public direction press us everywhere today; in our office buildings, our sports areas, our theaters and parks. Within 50 years, entrances, emergency exits and other departments in all public buildings may well display color symbols and direction signs that will be universally understood. If so, the Maine Medical Association and the Maine Medical Center will have helped to point the way.

MANAGEMENT OF HALLUX VALGUS — *Continued from Page 58*

of the patients. Of 142 patients operated upon, 117 displayed a satisfactory result applying formal and functional criteria.

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Psychoanalytic Comments on Thomas Hardy's "The Return of The Native"

JOHN A. ORDWAY, M.D.*

The setting for and perhaps the main character of the story, Egdon Heath, is immediately introduced to the reader, impressive, eternal, relatively colorless — "neither ghastly, hateful, nor ugly; neither commonplace, unmeaning, nor tame; but, like man, slighted and enduring; and withal singularly *colossal* and *mysterious* in the swarthy monotony." The author's pedantry is early introduced in references to his readings in both history and literature. The mood is one of somber repression/depression.

When the reddleman is introduced to this heavy scene, submission to the heath is introduced in the theme of a "promising being . . . (hiding) his prepossessing exterior (and interior) by adopting that singular occupation." There is already a hint of further intelligence and talents being concealed by a slow-moving, repetitive, dull occupation. The first two characters in the story continue the mood of repression/depression by walking side by side but not talking to each other. Finally, there is conversation about the girl in the reddleman's cart, but the scene soon returns to "not the repose of actual stagnation, but the apparent repose of the incredible slowness." Evidently the heath and the people in it are not actually stagnant or dead but in some condition of mind of great slowness. The author himself goes into such detail and at such length and uses such heavy language that one almost feels that the author, in considering the scene, is himself heavy-hearted. Real beauty or enjoyment seem mainly absent. Even when actual people are portrayed preparing something as cheery as a fire, they are "burdened figures," involved in gloomy and murky mystery which arouses the curiosity of the reader only sluggishly.

The clinician might well think here of the psychomotor retardation, the sluggishness of thought, the slowness of action, the gloomy mood, and the basic helplessness of the chronically depressed. Although the "revelers" are pictured as enjoying the fires, there is little joy in the song Grandfer Cattle sings. And when two of the countrymen start conversation, we are startled to find how stilted and unsalty for countrymen they are. In the laborious discussion

which introduces us to one of the sub-plots, one learns that a Mr. Wildevve has supposedly married a Miss Tamsin Yeobright and that Wildevve has been an engineer — but has thrown away his chance and taken a public house to make a living. Talents wasted in the service of remaining on the heath are thus again underscored early in the book. The first fully sketched character, Christian Cantle, one is not surprised to find is an inadequate man, unable to marry. Incidentally, although the reddleman has been endowed with some goodness and considerateness, he has been without name and seems almost some kind of stereotype that moves about the rural scene.

Even though the scene around one of many fires on the top of many barrows is one of dancing and described as noisy with cries and laughter, the dancers "pousette," whatever that word may mean, instead of carrying out some kind of country jig that a less self-conscious pedant might describe. The scene of the impromptu dance is scarcely joyous.

Flesh and blood, a full-blown character, is introduced finally with the appearance of Mrs. Yeobright at the fire on the barrow. But, of course, even in Mrs. Yeobright dwells the difficult situation of an "unmarriage" unwanted by her. When the reddleman returns Tamsin to her mother, Mrs. Yeobright, he begins to have a history and a name, Diggory Venn.

The author begins to develop in Mrs. Yeobright's character two distinct moods, "a gentle mood and an angry," between which she flies without warning. A similar contradiction or a paradoxical characteristic appears in Tamsin, in that she almost simultaneously wishes to collapse, sobbing, on her mother's bosom and yet disciplines herself severely, almost as if she were reprimanding herself before her mother does. Here, in two women, we find some humanness and a continuity between mother and daughter. Mr. Venn still is all kindness, a sort of "Mr. Gentle" — a red Mr. Clean.

The deceptive psychopath, Wildevve, the lady-killer, comes alive very quickly even though the physical description of him delineates him in parts rather than in a whole.

Again with a nice sense of the paradox, Hardy seems at last to make the rustics come alive at the

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Quiet Woman, Wildev's pub, where the group is celebrating a wedding, of course a wedding that has not taken place.

During this celebration, Eustacia is further mysteriously, indirectly, and enticingly introduced as a beautiful witch. But, as with the general mood of everything in the book so far, her conceits and spells, whatever they may be, have led her nowhere from Egdon Heath thus far. And as before, when the group leaves, "the scratching of the furze against their leggings" seems to connote displeasure rather than an irritating but warm accompaniment of life in a rural setting.

We are next introduced to Eustacia directly. This tall graceful lady stands among "mummied heathbells" in the midst of that country's "sinister condition." The author's style is heavy, involved, and replete with historical allusions which make it necessary for the reader to stop and follow the author's ruminations. But for all the details of the description, the countryside never stands out crystal clear but lies about like a powerful, pitiless impassive, implacable shapeless dark mass. The description comes out in constipated bits and pieces rather than in one continuous flow.

In the midst of this gloomy countryside, some loftiness and idealism about womanhood is introduced in the person of Eustacia. But, immediately, of course, she is caught by a bramble and checked, and yields herself to its pull, and stands still. Brooding Mother Earth, the countryside, holds her in grasp. And she is in "a desponding reverie."

The sluggish, frustrated, repressed and depressive mood of the novel is thus set in a repetitively and monotonously detailed manner that suggests that no matter how many human impulses attempt to break through and realize themselves, they will be held in check by a complicated, implacable nature whose character structure resembles that of a controlling, somber, and repressive mother from whom there is no escape. And it is no wonder that those who do not have to study this novel and report on it, either to their professors or to some other group, cease to read the novel before page 100 and do not take it up again. If one loses one's objectivity in the reading, one may become identified with the general depression, implicit hopelessness, and continually thwarted purpose of the helpless humans and half-humans that inhabit Egdon Heath.

Throughout, the style abounds in a pedantic kind of intellectualization, isolation of details from each other, repetitiveness, and a curious screening-off or isolation of events from the emotions that ought to go along with them or at least be conveyed to the reader. As the clinician reads on toward the eventual arrival of the Native, he feels bound up in a sort of obsessive compulsive net from which he would dearly like to escape.

But despite the abundance of detail and repeti-

tiveness, Eustacia comes through as a full-bodied person. And her "forwardness of mind" quickens the pace of the novel and, female or not, is something of a forward thrust.

But although Eustacia is well outlined and fairly well understood and her present a logical outcome of her past, the question of why intelligent Diggory has become a drudging reddleman remains a mystery even after Hardy's description of him, and the information that Tamsin has rejected him as a suitor. One may accept Hardy blankly that a rejected suitor takes to roaming and becomes a reddleman. One might conjecture about the red fury of his color and the reaction formation of kindness in his character covering up the deep-going anger toward his mistress. One may add some kind of phallic conjecture about his overall redness, but Hardy's description of his character does not support the conjecture. Venn seems somehow to have just happened. Hardy wants him to happen, so he happens — magically. One wonders if the fury over rejection could be converted by reaction formation into the altruism Diggory shows in trying to bring Tamsin together with Wildev. In the Olympian Eustacia, it is clear that she can love only another Olympian like herself, who is for a while Wildev; and of course his successor is early dreamed up by her to be potential god Clym Yeobright even before she sees him. Well before the meeting she forms a grandiose fantasy about him and then insists on fitting the fantasy around him after her own narcissistic wishes for only a great deity to be her husband. As Hardy observes, "five minutes of overhearing (2 furze-gatherers) furnished Eustacia with visions enough to fill the whole blank afternoon. . . . She never could have believed in the morning that her colorless inner-world would, before night, become as animated as water under a microscope." Hardy's account of Eustacia talking herself into believing that her fantasies about Clym would come true and the subsequent account of how she came firmly to believe that her fantasies about him were factual is masterfully done. This transference of wishes and fantasies and hopes from inside herself to the person of Clym is, for this psychoanalytic clinician, the most sure-footed description of a psychological process in the book.

Moving into a description of Clym, Hardy at one moment seems to speak true of mankind in describing the attitude of the Egdon Heath men toward Clym. "The devout hope (out loud) is that he is doing well, the secret faith is that he is making a mess of his life." At the next moment, however, Hardy is ascribing Clym's presence in the diamond trade to a "vagary of fate." His boredom with the vanities of the diamond trade is understandable. His decision to start a school is comprehensible in view of his precocious scientific inventiveness and curiosity. It is, however, obscure as to why later he is vir-

tually blinded in his attempt to carry out a perhaps truly successful life pattern. One is tempted to say that he is following out a hidden ideal of his mother's, that he is thereby winning her and/or her favor, and that he has visited on himself a classical oedipal punishment. But the evidence is slim. Since his scholarship and reading has been one of the causes of the break with his mother eventually, one might also speculate that he has punished himself with blindness and become a living memorial of punishment to the woman from whom he has separated himself and thus lost. During the courtship of Clym and Eustacia, there are many hints of the conflict within Eustacia between her wishes to fulfill her ideals of the fashionable life on the one hand and her wishes to be married to a man who promises only to frustrate these wishes. Clym unwaveringly states that he will remain in Egdon Heath or nearby and start a school. She continues to pursue this man masochistically in pursuit of the general opposite of what he promises.

In Clym's portrayal, it is interesting to note how completely remote and unreal the city of Paris is. He talks of it to Eustacia, but in the text there are no descriptions of any communications to speak of between Egdon Heath and a friend in Paris or vice versa. It is as if the diamond business and the real people in it with him have existed only as some kind of a device to the story rather than as an actuality of Clym's life. The business seems as foreign as a diamond ring on the hand of a dirt farmer. One can hardly believe that it is a part of him. It, of course, however makes perfect psychological sense that Clym marries and defeats a woman who, like his mother, insists on having things the way that she wants them, just as his mother has and just as his mother has been defeated. The tight, rigid Mrs. Yeobright is unbending in her will that her son marry some carbon copy of herself — or at least implicitly it seems this way. Eustacia is equally strong-willed and determined that Clym will turn out to be the man she wants him to be, namely a diamond merchant in the fashionable world of Paris. Such a rigid adherence to the demands of their inner-world to the exclusion of the realities of the outer Egdon Heath world of course leads both women to disaster. But Clym, like several other bumbling males in the story, shows a kind of flexibility that helps him to survive what might be regarded as a conversion blindness. Wildeve, on the other hand, like Mrs. Yeobright and Eustacia, follows the dictates of his selfishness to his grave. In a way it seems that all the characters in the story who defy the heath, and/or also insist that the loved one of the opposite sex be precisely what they want them to be in this defiance, perish in the end: Mrs. Yeobright (alone stung by her sexual feelings toward her son and) Eustacia, and Wildeve (together yet apart in the waters of the dark heath). One can-

not leave or rebel against mother or try to and survive.

In another sense these characters in Hardy's words "yearn for the difficult, weary of that offered, care for the remote, and dislike the near." Although this is said about Wildeve, it is also true of Eustacia and, in a more indirect but distinguishable way, about Mrs. Yeobright too. It certainly seems clear that Mrs. Yeobright intends to care for the remote or unattainable. — namely control over her son and her niece.

In ensuing relationships between Clym, his mother and Eustacia — as well as when they are involved with Christian Cantle, Wildeve, and the red-dleman — it is never clearer how intent the various characters are at muddying up their relationships with each other through not only rigidity of purpose but dramatics with which they protect their own grandiose plans for control. It is also never clearer that omnipotent fate, is the person of Thomas Hardy, steps in again and again to muddy up situations with circumstantial juxtapositions of characters in such a way that misunderstandings double, triple and quadruple. And, of course, when he needs virtue temporarily present, he suddenly produces Diggory Venn. That "Mr. Virtue" is unable to set things right is again a product of muddled communications between Virtue and mortals.

It is noteworthy that throughout the book the tragedies which are constantly mounting are never relieved by any true creativeness on the part of any of the major or minor characters. The mood of "Far from the Madding Crowd" is not upon either the author or his characters. Any promising creation or creative thought is squelched by the domineering omnipotent, frustrating, somber, brooding Egdon Heath. Man is helpless in the grips of a harsh mother. Woman is helpless in the grips of either the same mother or helpless in an attempt to become such.

Clym Yeobright's contrasting realism and idealism are distilled in the paragraph where he says to Eustacia that he *can* rebel in high Promethean fashion against the gods and fates as well as she and that he has felt more steam and smoke of that sort than she has ever heard of. He says, however, that he perceives nothing particularly great in the greatest walks of life and therefore nothing particularly small in his new occupation of furze-cutting after he goes partially blind. This is in response to the cooling of her ardor for him as a person while it remains clear that she wishes to be married to a man of fashion. She has now withdrawn the transference of a man of fashion back into her own mind, no longer identifies him with this ideal and is falling out of love with him. She is now irritated with him; and as she withdraws her view of the man of fashion back inside herself, she visits frustrated irritation upon herself.

Later when Eustacia considers substituting Wildeve for Clym, Clym moves forward realistical-

ly to help her adjust herself to their hopefully temporarily changed circumstances and to his occupation as a furze-cutter. He further attempts to bring about reconciliation with his estranged mother.

As reconciliation approaches, however, brought about by Mr. Virtue, — toward women — Diggory Venn and the attempted visit to Clym's mother, Hardy arranges it that she shall start into the final step of reconciliation just a few moments too late. The magic and spells are by no means only Eus-

tacia's and Egdon Heath's. Hardy has some too. And they make life seem dreadfully tragic, complicated and contrived for the book's characters; — except of course for those who are trustworthy, loyal and woodenly obedient to Mother Egdon. One is left with somber thoughts about the author's life at the time when he wrote this book.

R.F.D. No. 4, Box 53, Bangor, Maine 04401

BETTER PRE-HOSPITAL EMERGENCY SERVICES THROUGH EMERGENCY CARE, INC.

Continued from Page 62

of a "Dial 911" telephone system which is mandatory to receive federal funds for emergency medical services.

Emergency medical needs — a survey to determine types of emergencies, how they get to the hospital emergency department and where they come from.

Continued emergency training — coordinating all area emergency training with proper organizations from basic aid to hospital programs.

Funding — surveying needs and applying for funds to enable ECI to more actively carry out its goals, and purchasing emergency equipment if funds are received.

Legislation — studying legislation pertinent to Emergency Care, Inc. and emergency services to make best use of resources and not be in conflict with law.

Peer review — assuring quality emergency care services at all levels, including in-hospital care, by constant review.

Public relations — acting as an impartial evaluator of public complaints and praise and as liaison among press, public, hospitals and emergency services.

To accomplish realistic improvements in the existing emergency medical system, the committee

proposed a survey and evaluation of four aspects as the number one priority:

1. The level of present emergency medical training and the need for future training programs.
2. Radios and dispatch systems.
3. Appropriateness of responding vehicles.
4. Method of transportation of true emergencies as seen by hospitals.

Questionnaires and data sheets were distributed to concerned agencies and personnel. These have been evaluated, and changes for improvement recommended or implemented.

The Goals and Priorities Committee meets monthly to evaluate the progress of ECI's priorities and establish a new timetable and priorities, as indicated.

This is what one Maine locality is doing to try to coordinate and improve pre-hospital emergency services. It shows that the several community health and safety services can effectively work together on a medical program, avoiding duplication of effort, while making plans to provide the best and quickest emergency care to persons in need. It's only a start, and there is a long way to go. But Emergency Care, Inc. appears headed in the right direction.

Annual Meeting Dates For Your 1974 Calendar . . .

Maine Medical Association, June 15-18
Shawmut Inn, Kennebunkport, Maine

American Medical Association, June 23-27
Chicago



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

Physician Input Wanted for Burn Management Study

TOM PALMBERG*

Responding to a request from the Maine Committee on Trauma of the American College of Surgeons, the Maine Comprehensive Health Planning Agency has undertaken a study of the burn problem in Maine.

Stemming from a preliminary study done originally by Dr. Richard Britton, Chairman, Department of Surgery at the Maine Medical Center, an ad hoc Burn Study Committee of the State Health Planning Council will further this effort by gathering in depth information about the magnitude of burns and their current level of treatment.

A questionnaire has been designed as a vehicle for collecting the necessary information. This questionnaire was mailed to physicians and hospitals on March 1st. This form has been designed to gather information about the number of burned patients treated during the previous calendar year, the severity of the burn, the length of the hospital stay (if applicable), and also information about the cost of treating burns. Data generated by this questionnaire will be analyzed to determine the best means of formalizing a system that will assure optimum treatment of Maine's burn accident victims.

It should be emphasized that the Committee, its members representing a wide range of backgrounds and experience, is approaching this problem open-mindedly. It is the goal of the Committee not to give preference to any one institution or methodology, but to foster the development of a total system that will include all elements essential to optimum burn care including: training of ambulance personnel in the correct early procedures for the care and transport of burn victims; an adequate emergency medical systems network; designation of hospital burn officers to be responsible for initial diagnosis and consultation; educational programs for hospital burn staff and physicians; acceptance and circulation of appropriate emergency room burn procedures; identification and designation of appropriate intensive or long-term care facilities; co-operative arrangements with external resources, i.e., military facilities and Shriner's Hospital in Boston; adequate participation by third-party payers, etc. Only when these and other elements of the total system are available and functioning in the proper mix will Maine offer optimum burn treatment.

A report of the findings and recommendations of this committee will become an integral part of the State plan, and as such, will be the guide for the development of burn care in Maine.

Should physicians have comments or should they desire more information, please contact Tom Palmberg, State Comprehensive Health Planning Agency, Augusta, Maine 04330 (Tel. 289-2651).

*State Comprehensive Health Planning Agency, Department of Health and Welfare, Augusta, Maine 04330.



SOCIAL SECURITY CHANGES

Modification of 14-Day Transfer Requirements for Extended Care Benefits – General — Prior to the 1972 amendments, a beneficiary was entitled to extended care benefits only if he was transferred to a Skilled Nursing Facility (formerly extended care facility) and received a covered level of care within 14 days of discharge from a hospital. This requirement is modified as described in A and B below for skilled nursing facility (SNF) admissions occurring on or after October 30, 1972. These modifications apply to initial SNF admissions from, and subsequently readmitted to, a participating SNF. The requirement that readmission to the SNF must be within 14 days of discharge if the beneficiary is to be deemed not to have been discharged from the SNF remains unchanged.

A. *Nonavailability of Appropriate Bed Space* — Effective October 30, 1972, intervals of up to 28 days permitted where transfer to a participating SNF has to be deferred for more than 14 days following the hospital discharge because no bed is available in facilities ordinarily utilized in the geographic area in which the beneficiary resides. The individual must require within the 14-day period after hospital discharge, and continue to require through admission to the SNF, a covered level of care for a condition for which he received inpatient hospital care, and he must meet all other extended care benefit requirements. As a general rule, the geographic area in which a beneficiary resides should be defined in such a way that a patient would not be taken away from his family and transported over great distances.

B. *Medicare Appropriateness* — More than 14 days would also be permitted for SNF admissions occurring on or after October 30, 1972, where upon discharge from the hospital, it is *medically predictable* that the individual will require covered SNF care for treatment of a condition for which he received inpatient hospital care but it would be medically inappropriate, because of the patient's condition, to begin an active course of treatment in a SNF immediately after such hospital discharge. In these cases, the transfer requirement would be considered to be met, even though more than 14 days had elapsed, if the patient begins receiving a covered level of SNF care within such time as it would be medically appropriate to begin an active course of treatment. (Note: In other words, there is no maximum day requirement for patients who are discharged from a hospital with a medically predictable condition which will subsequently require skilled nursing care.)

News, Notes and Announcements

NOTICE

All Maine physicians are welcome to attend a presentation by Louis Weinstein, M.D., Ph.D., professor of medicine, Tufts University School of Medicine, on "The Pulmonary Complications of Primary Extrapulmonary Infections."

This will take place at the new Sheraton Inn, South Portland, adjacent to Exit 7, Maine Turnpike and the Portland Jetport, on WEDNESDAY, APRIL 3, 1974 — 1:30 p.m.

Sponsored by the Maine Thoracic Society and the Maine Lung Association.

Luncheon at 12:15. Make your reservation by calling 622-6394.

TUFTS UNIVERSITY SCHOOL OF MEDICINE OFFICE OF CONTINUING EDUCATION PRESENTS

MINOR SURGERY OF THE SKIN

Of interest to family physicians, internists, dermatologists and general surgeons

Friday, April 5, 1974

- 8:30 Registration
- 9:00-12:00 General Considerations of Minor Surgical Technique.
Charles P. Vallis, M.D.
- 12:00-12:30 Question Period.
- 12:30 Luncheon.
- 1:30- 4:30 Selection of Office Procedures for Treatment.
Harvey B. Ansell, M.D.
- 4:30- 5:00 Question Period.

Saturday, April 6, 1974

- 9:00-12:00 Indications for Biopsy and Biopsy Technique;
Some Common Skin Lesions Requiring Biopsy.
Milton R. Okun, M.D.
- 12:00-12:30 Question Period.
- 12:30 Luncheon.
- 1:30- 4:30 Cryosurgery.
Setrag A. Zacarian, M.D.
- 4:30- 5:00 Question Period.

REGISTRATION FEE: \$110 (Includes Luncheons and Coffees)

The Continuing Education Program of Tufts University School of Medicine has been granted full approval by the Council on Medical Education of the American Medical Association.

This seminar has been approved for 14 hours credit by the Massachusetts Academy of Family Physicians.

For further information write to: Tufts University, Registrar for Continuing Education, Box 72, 136 Harrison Ave., Boston, Mass. 02111; Tel. (617) 423-4600, extension 309.

12TH ANNUAL CLINICAL HYPNOSIS WORKSHOP

The 12th Annual Clinical Hypnosis Workshop for physicians, dentists and psychologists will be held on April 25-28, 1974 at Mallory and Dowling Amphitheaters, Boston City Hospital. Co-sponsors: New England Society of Clinical Hypnosis, Oral Surgery Dept. Boston City Hospital and Boston University School of Postgraduate Dentistry. Eligibility: membership A.M.A., A.D.A. and A.P.A. or equivalent. Tuition \$185. Residents \$95 (includes 3 luncheons and dinners). For further information contact: Lawrence M. Staples, D.M.D., Workshop Director, Box 162, Holderness, New Hampshire 03245.

THE AMERICAN BOARD OF FAMILY PRACTICE

The American Board of Family Practice announces that it will give its next two-day written certification examination on October 19-20, 1974. It will be held in five centers geographically distributed throughout the United States. Information regarding the examination may be obtained by writing:

Nicholas J. Pisacano, M.D., Secretary
American Board of Family Practice, Inc.
University of Kentucky Medical Center
Annex #2, Room 229
Lexington, Kentucky 40506

PLEASE NOTE: It is necessary for each physician desiring to take the examination to file a completed application with the Board office. Deadline for receipt of applications in this office is June 15, 1974.

INSTITUTE FOR SEX RESEARCH 1974 SUMMER PROGRAM IN HUMAN SEXUALITY June 16-27

Lecture course, forums on sociosexual issues, sex counseling symposium, attitude-reassessment program. Registration fee \$285.00. Registration ends May 17.

Write: Institute for Sex Research — Summer Program
416 Morrison Hall
Indiana University
Bloomington, Indiana 47401

PULMONARY DISEASE

August 25-29, 1974. First Annual Seminar, Topics in Pulmonary Disease. National faculty including Barry Fanburg, M.D., Thomas Petty, M.D., Gareth M. Green, M.D., and more. Twenty-one hours of Category I credit available. Colby College/Thayer Hospital, Waterville, Maine.

Inquiries to R. H. Kany, Director, Special Programs, Colby College, Waterville, Maine 04901.

CASSETTE TAPES AVAILABLE

IN THE SPECIALTY OF ORTHOPAEDIC SURGERY

ORTHOPAEDIC AUDIO-SYNOPSIS FOUNDATION publishes monthly cassette tapes which contain lectures and discussions in the specialty of orthopaedic surgery. Subscribers also receive materials for convenient cassette reference and storage, as well as occasional "bonus" releases in basic science subjects of concern to orthopaedic surgeons.

For further information write: OASF, 1510 Oxley Street, South Pasadena, California 91030.

OSTEOSARCOMA REFERRALS REQUESTED

Cooperation of physicians is asked in referral of patients with operable bone or soft tissue sarcoma to the Surgery Branch, National Cancer Institute, to enter into a randomized study of Warfarin anticoagulation and chemotherapy as adjunctive measures to surgical treatment.

Patients must have no evidence of metastatic disease and must not have received chemotherapy, radiotherapy, or surgery to the primary exclusive of biopsy or minimal local resection.

Physicians interested in further details and in having their patients considered for admission may write or telephone: Admitting Office, National Cancer Institute, Clinical Center, Room 10N119, National Institutes of Health, Bethesda, Maryland 20014. Telephone: 301-496-2031.

County Society Notes

CUMBERLAND

The 380th meeting of the Cumberland County Medical Society was held on October 18, 1973 at the Sheraton in South Portland, Maine. Following a social hour at the pool side, an excellent dinner was served. Needless to say, our attendance set an all-time record of 106 as we literally overflowed the dining room.

The meeting was called to order by the President, Dr. Douglas R. Hill at 8:30 p.m. Reading of the minutes of the last meeting was omitted. The following applications were read for the second time and voted into membership: Drs. F. Stephen Larned, Elizabeth Serrage, Richard Herman, Frances Dyro, Donald Klopp, Timothy Carnes, Pierre Provost and Joseph Markee.

Applications from Drs. Thomas Ashby, Paul Cox, Andrew Iverson, Jr. and Donald Wilson were given a first reading.

Dr. Alvin Morrison was transferred from active to affiliate status.

Dr. Hill announced two new television programs, one of which relates to abortion. This presentation has produced considerable discussion within the Society, and to prevent any further divisive action, Dr. Hill suggested that this film not be televised at this time. A motion to reopen the subject of abortion was tabled.

Dr. Hill then introduced Dr. Robert E. McAfee who has organized a panel of members expert in various fields of medical socio-economics. Dr. McAfee presented a report as delegate to the AMA.

Dr. Howard P. Sawyer, Jr., our Maine Medical Association Executive Committee member, presented a report of their recent meeting.

Dr. Ferris S. Ray, a member of the Maine Medical Association Insurance Committee, discussed the reactivation of this group and its recent functions.

Dr. Louis A. Asali, who is a member of the Board of Blue Shield, told us about their recent problems.

Dr. Ronald J. Carroll, recently returned from Utah, gave a lucid presentation of the U.P.R.O. which is a functioning P.S.R.O.

Finally, Dr. Daniel Hanley gave a summation of much of the previous material and fielded the questions and comments from the I.R.A. (Irascible Rascals Association) at the rear of the hall.

Dr. Hill adjourned the meeting at 10:15 p.m.

The 381st meeting of the Cumberland County Medical Society was held on November 15, 1973 at Valle's Restaurant in Portland, Maine. Following the social hour, an excellent steak dinner was served. Ninety members and guests were in attendance. Members of the Cumberland County delegation to the Maine State Senate and Legislature were present.

A brief business meeting followed the dinner. Applications of Drs. Andrew Iverson, Jr., Donald Wilson, Paul Cox and Thomas Ashby were read for the second time and these physicians elected to membership. Dr. Ashby is a transfer from Honolulu, Hawaii Medical Society.

First readings of applications for Drs. Michael Lamb and Hugh Phelps were done and the applications referred to the Executive Committee.

Dr. Howard P. Sawyer, Jr., our Maine Medical Association Executive Committee Representative, reported on the recent meeting of this committee.

Dr. Douglas R. Hill reminded the members and delegates that the winter meeting of the Maine Medical Association House of Delegates will be held in Bangor at St. Josephs Hospital on December 9, 1973.

The resolution from the medical staff of the Pineland Hospital and Training Center was presented. This protests the degree of intervention in medical practice within the institution by the administrative personnel. Dr. Domenico A. Santoro made comments concerning recently passed legislation which is intended to prevent this interference with medical practice.

Dr. Sidney R. Branson, Chairman of the Bylaws Committee, presented an amendment which was given first reading as follows:

"During summer recess and/or unusual delays between scheduled meetings of the Society, applications for membership may be considered, reviewed and acted upon by the Executive Committee." — Signed by Drs. Sidney R. Branson, George F. Sager, Laban W. Leiter and Robert H. Pawle.

A lengthy discussion ensued after this presentation which will be voted upon at the next meeting of the Society.

Dr. Hill appointed Drs. William Taylor and Elton R. Blaisdell as a committee to present a resolution on the death of Dr. Arthur B. Woodman.

There being no further business to transact, the business meeting was adjourned by Dr. Hill.

Dr. Robert E. McAfee introduced the speaker of the evening, Dr. Paul A. Fichtner, President of the Maine Medical Association. Dr. Fichtner presented a review of government intervention and encroachment upon the practice of medicine and made comments referable to current pending legislation in this country. He presented a physician's Bill of Rights proposed by the Illinois Medical Society and asked for its support. After Dr. Fichtner's presentation, a discussion period was held.

ALFRED E. SWETT, M.D., *Secretary*

PENOBSCOT

A meeting of the Penobscot County Medical Society was held at the Pilot's Grill in Bangor, Maine on November 20, 1973. It was a joint meeting between the County Society and the Penobscot County Bar Association. A total of approximately 80 members and wives, and a like number from the Bar Association, were in attendance. In view of the nature of this joint meeting, a business meeting was not held.

After a social hour and dinner, the Master of Ceremonies, Norman Minsky, introduced the speaker of the evening, Dr. Jonathan B. Weisbuch, Associate Professor, Department of Community Medicine, Boston University School of Medicine. Dr. Weisbuch's presentation dealt primarily with the potential and real interactions between the legal and medical professions. He dealt primarily with the treatment of patients in the adolescent and adult age groups in relationship to several examples of disease state and the physicians' responsibility and liability in the treatment of these patients. A plea was made by Dr. Weisbuch that both professions cooperate and join together in the formulation of practical, workable and realistic legislation so that physicians may properly and legally treat their patients without fear of legal reprisal. He also emphasized the need for physicians to become cognizant with the law and how it applies to their daily practice. Following the conclusion of Dr. Weisbuch's presentation, a discussion period was held, following which the meeting was adjourned.

A meeting of the Penobscot County Medical Society was held on December 18, 1973 at the Tarratine Club in Bangor, Maine.

The minutes of the previous meeting were read and approved. There was no old business.

Under new business, a report of the interim meeting of the House of Delegates of the Maine Medical Association was presented. A newsletter had been mailed prior to the meeting, outlining the high points of the House of Delegates' meeting. No further comments were forthcoming as a result of that meeting or the newsletter. Applications for membership in the Penobscot County Medical Society and the Maine Medical Association were received from Drs. Frank T. Zorich and Charles T. Lynch, Jr. These applications were presented to the membership with recommendation from the Executive Council for their approval. Each applicant was approved unanimously into membership.

The scientific portion of the meeting was devoted to a most in-

teresting presentation by Dr. Robert O. Kellogg, who discussed his recent experiences with the S.S. Hope in Brazil. His talk included a slide presentation, which depicted the conditions under which medicine was practiced in that area in Brazil and many of the diseases which were encountered. A question and answer session followed Dr. Kellogg's presentation.

Following the scientific presentation, the meeting was adjourned.

PHILIP G. HUNTER, M.D., *Secretary*

WASHINGTON

A regular meeting of the Washington County Medical Society was held on November 26, 1973 at the Peavy Memorial Library in Eastport, Maine.

The meeting opened at 7:30 p.m. with eight members and guests present. Dr. G. Bernard Shaw, President of the Society, presided.

Minutes of the last meeting were read and approved.

Dr. Shaw discussed PSRO, especially in relationship to a three-day meeting that he had attended. Dr. Shaw felt that the internal audit that could be set up would greatly facilitate knowledge of what is going on in the hospital, and also how each individual doctor is handling his patients. It could be set up to detect deviations from any department or section of the hospital. It would enable the staff to do away with one or two committees and probably leave only the Internal Audit Committee and the U & R Committee, whose main function would mainly be "cost control."

Dr. Rowland B. French, Eastport, reported on the Diabetes Week. He stated that there had been an excellent response throughout the County, with newspaper publicity and increased patient interest.

There was a discussion on Student Preceptorship with a feeling by the physicians of Eastport that they would find it difficult to carry out any type of program that would be beneficial to the student. There was also some discussion on use of a pediatric nurse associate with the feeling, if this could be controlled by the Down East Clinical Associates, it would be very practical.

Dr. James C. Bates of Eastport, said that he would like to have the next meeting in the Calais area, since there have not been any doctors from that area to the meetings for some time; therefore, it was moved and seconded that we attempt to have a meeting sometime the latter part of January in the Calais area, with hope that the St. Stephen physicians would take part.

KARL V. LARSON, M.D., *Secretary*

ANDROSCOGGIN

The annual meeting of the Corporators of the Androscoggin County Medical Association was held at Steckino's Restaurant in Lewiston, Maine on December 30, 1973, with 31 members present.

The minutes of the previous meeting were read and approved. Reports from Standing Committees were received orally. Following the finance committee report, the treasurer's report was read and approved.

Membership application of Dr. Andrew D. McKee was voted approval by the membership upon recommendation of the Councilors and Credentials Committee. Dr. John W. Carrier presented the Memorial Resolution for Dr. Gilbert Clapperton. The membership was acquainted with the In Memoriam in Dr. Clapperton's honor established at the Bates College Library.

Dr. Charles A. Hannigan presented the slate of officers for 1974, which was voted by unanimous ballot:

President: Dr. Gerard L. Morin, Lewiston

Vice-President: Dr. Louis N. Fishman, Lewiston

Secretary-Treasurer: Dr. Richard M. Swengel, Lewiston

Councilor: Dr. Frederick B. Lidstone, Auburn

Delegate to the M.M.A. House of Delegates: Dr. Stanley D.

Rosenblatt, Lewiston. Alternate: Dr. Richard W. Turcotte, Lewiston

Dr. Morin then assumed the chair as President.

There being no other business, the meeting was adjourned at 9:20 p.m.

RICHARD M. SWENGEL, M.D., *Secretary*

LINCOLN-SAGADAHOC

A regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on October 16, 1973.

Dr. Peter A. Evans, the President, called the meeting to order at 8:40 p.m. Minutes of the last meeting were read and accepted as read.

Old Business:

1. Letter from Dr. Paul A. Fichtner not available and so postponed until next month.
2. The report on school and athletic physicals is not yet finished!

New Business:

1. Dr. Richard C. Leck discussed executive meeting last week concerning PSRO. (A) It appears that there will be free choice of physicians by patients. (B) Patient's record, confidentiality not really fully maintained now and that the law does not spell it out. The laws probably need reviewing and updating to preserve confidentiality. (C) Research has to stay in established norms. (D) Probably criteria for mode of therapy to remain at local level — these four points to be re-discussed in December 1973.
2. Dr. Leck stated that BCDS is now Maine Data Service.
3. Dr. Leck mentioned that generic drug prescribing probably should not be done unless one reviews his liability limits as per recent lawsuit settlement of two million dollars.
4. Dr. Louis Bachrach introduced the speaker, Dr. Floyd B. Goffin, who spoke on "Vertigo."

The meeting was adjourned at 9:50 p.m.

ROBERT M. HASSAN, M.D., *Secretary pro tem*

A regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on November 20, 1973.

Dr. Peter A. Evans, the President, presided. The minutes of the October meeting were read and accepted as read.

Dr. Evans asked Dr. Robert M. Hassan about the committee report on school and athletic examinations; Dr. Hassan reported that the committee was to meet this evening but has been unable to do so.

The question of fee schedules was discussed, and the tenor of discussion was that fixing of prices of service as a group is unwise and perhaps illegal.

The applications for active membership of Drs. Raymond H. Dominici and Richard A. Giustra, both of Brunswick, were proposed by the Board of Censors. The applications of Drs. Giustra and Dominici were approved by the membership.

Dr. Evans then introduced Dr. Paul H. Dumdey, who spoke about Influenza.

The meeting was adjourned at 9:40 p.m.

A regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on December 18, 1973.

The meeting was called to order by the President, Dr. Peter A. Evans, at 8:40 p.m. The minutes of the November meeting were read and accepted as read.

Old Business: Dr. Evans asked Dr. Paul A. Fichtner to speak on the letter sent over his signature in June asking for a list of local prevailing charges for medical services. Dr. Fichtner described the historical background of that letter, as a change from the House of Delegates of M.M.A., and discussion followed regarding the Medicare division of the State into three fee zones.

Dr. Charles E. Burden reported that he and Dr. Hassan have not yet met to discuss the matter of recommendations for school standards of health supervision.

Committee Reports: Dr. Elihu York reported on the December

meeting of the House of Delegates. PSRO legislation is deplored, but there will be a corporation formed to apply as PSRO agent as long as the law stays on the books. There may be a fee schedule for Medicaid services proposed by the State Department of Health & Welfare. Model legislation was proposed to clarify the legality of medical treatment of minors with or without parental permission. The Tel-Med program in Franklin County was described.

Dr. Richard C. Leck expanded on the composition of the PSRO corporation. Tel-Med was further discussed. Dr. Leck and Dr. Fichtner discussed the disapproval of PSRO by the House of Delegates of the A.M.A.

The recommendation of the Board of Censors that the application for Affiliate Membership by Dr. George E. McCabe, of RFD #3, Waldoboro, be approved was moved by Dr. York and seconded by many and unanimously approved.

Dr. Fichtner proposed that this Society hold a social meeting annually and invite all wives. The motion was seconded, with stipulation that a committee be appointed by the incoming president to organize.

Dr. Peter Evans appointed Drs. Dougherty, Griffin, and Belknap to the nominating committee, to bring in a slate of nominations for the annual election next month.

Dr. Bachrach introduced Dr. Richard A. Giustra, who gave a slide-illustrated paper on Lisfranc Fractures of the Foot.

GEORGE W. BOSTWICK, M.D., *Secretary*

Letters to the Editor

To the Editor:

Maine's oldest voluntary health agency, the Maine Tuberculosis and Health Association has adopted a new name: The Maine Lung Association.

The Maine Lung Association, which serves the entire State of Maine has greatly broadened its range of concern and activities from the days when the first Christmas Seals were sold to help bring TB under control.

We now have programs designed to fight all lung disorders including emphysema, bronchitis, and asthma as well as to discourage smoking and decrease air pollution, both of which contribute heavily to the incidence of lung diseases.

As the current president of The Maine Lung Association, I am gratified to be able to head an organization which is evolving with the times. By making people with lung problems the center of our Association's priorities, the goal is set to work for treatments and preventive measures that will help those suffering from all breathing disorders, as well as to work for the final eradication of tuberculosis, which still infects thousands of Americans each year.

The continuing education of physicians in the diagnosis, treatment and management of pulmonary disease has a high priority in the Association, and with its medical section, the Maine Thoracic Society. In addition to sponsoring teaching sessions, the Association makes available a wide array of professional literature developed by our parent body, the American Thoracic Society. We are, also, pleased to assist busy physicians in educating their patients via the provision of effective health education materials.

Please contact us at 20 Willow Street, Augusta 04330 for further information.

BRADLEY E. BROWNLOW, M.D.
Blue Hill, Maine 04614

To the Editor:

NOTICE TO: ALL REGISTERED PHARMACIES IN THE
STATE OF MAINE

The Drug Enforcement Administration (DEA — formerly BNDD) has notified us that effective December 17, 1973 amobarbital, secobarbital, and pentobarbital are being transferred to Schedule II. This means that *written prescriptions* are to be required and *NO refills* for Abbott's, Nembutal and Lilly's, Seconal, Tuinal, and Amytal after that date. Special inventory

of stocks of the three barbiturates are to be taken on January 1, 1974. Purchases after January 1, 1974 by pharmacies must be via Schedule II order forms. Security requirements for storage becomes effective May 13, 1974 with exceptions for dosage forms that must be kept under refrigeration.

Remaining in Schedule III: 1.) Any suppository dosage form of the above or any salt of any of these drugs and approved by the FDA for marketing only as a suppository. 2.) Any compound, mixture, or preparation containing amobarbital, secobarbital, pentobarbital or any salt thereof and one or more other active medicinal ingredients which are not listed in any schedule.

REMEMBER: When the laws are complied with — excuses and explanations are not needed to practice pharmacy. However, retention of your license is required.

RICHARD O. CAMPBELL
Secretary
Commissioner of Pharmacy
Lewiston, Maine 04240

**Director for Department of Health
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community based health corporation
(non-university connected). M.D. or
equivalent degree or experience. Please
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Inc., Dept. A, 295 Water Street, Au-
gusta, Maine 04330, or call collect (207)
622-7566, Ext. 6.**

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The Journal of the Maine Medical Association

Volume Sixty-five

Brunswick, Maine, April 1974

Number 4

Coronary Care Unit

Report on Third, Fourth, and Fifth Years' Operational Experience in a 236-Bed General Hospital†

CHARLES W. STEELE, M.D., F.A.C.P.* and MARILYN BRACKETT, R.N.**

The first coronary care unit to be put into operation in the State of Maine admitted the first patient with a coronary thrombosis and acute myocardial infarction on September 27, 1965. (That patient is living and still working at his regular job.) At the end of eight years, on September 26, 1973, a total of 2,319 patients had been admitted to this coronary care unit, and of this total number admitted, 302 died while they were still on the unit for an overall mortality rate of slightly over 13%. The experience with the 388 patients admitted to this original four-bed coronary care ward during the first two full years of operation has been previously reported by Steele et al.¹

This paper will deal primarily with a study of the next 816 patients admitted to this coronary care ward (enlarged to eight beds) during the three-year period from September 27, 1967 to September 27, 1970. There were 91 deaths on the unit during this subsequent three-year period. These 816 patients have been separated into two groups; namely, 1) those that had a confirmed coronary thrombosis with an acute myocardial infarction; and, 2) those that did not, but with signs and symptoms sufficiently like those of an acute myocardial infarction to warrant their admission to the unit for a period of observation. Of particular interest to the authors was the type of case that made up the latter group.

An additional 1,115 patients have been admitted to this same eight-bed coronary care unit for the three-year period starting September 27, 1970 and

ending September 26, 1973. One hundred twenty-eight died while they were still on the unit. The records of this last three-year group have not yet been studied and, therefore, the data is not available as to the number of patients in this group with acute infarcts, and those that turned out to have only symptomatology suggestive of acute coronary thrombosis with infarction and were admitted to the coronary care unit for initial monitoring and observation, or those admitted for elective counter-shock, pacemaker insertion, pacemaker battery changes and for other miscellaneous reasons. Hence, the number of cardiac deaths among the patients with coronary thromboses with acute myocardial infarctions that occurred while on the coronary care unit is, of course, also unavailable at this writing.

The total number of patients admitted, the actual number of cases with coronary thromboses with acute infarctions, and the number of acute coronaries that died while on the unit, along with the percentage of cardiacs that were deceased during the period from September 27, 1965 through September 26, 1970 is shown on Table 1. The total number of patients admitted to this coronary care unit and the number of deaths during the sixth, seventh, and eighth years' of operation have also been included in Table 1 to give an overall picture of the eight full years this coronary care unit has been in operation.

Shown in Table 2 for the third, fourth, and fifth years' are:

1. The number of patients with coronary thromboses with acute myocardial infarctions that went into ventricular fibrillation, and on whom electrical defibrillation was attempted.

†From the Cardiology Section, Department of Medicine, Central Maine General Hospital, Lewiston, Maine 04240.

*Senior Cardiologist, Central Maine General Hospital.

**Head Nurse, Coronary Care Unit, September 1965 to June 1971.

TABLE 1

NUMBER OF ADMISSIONS AND DEATHS BY YEARS ON THIS CORONARY CARE UNIT IN 8 YEARS OF OPERATION					
Year	Total number of patients admitted	Total number with acute myocardial infarction	Total number of deaths while on unit	Percentage acute cardiac deaths	Total number without myocardial infarcts
First year 27 Sept. '65 to 26 Sept. '66	162	141	31	21.9	21
Second year 27 Sept. '66 to 26 Sept. '67	226	191	52	27.2	35
Third year 27 Sept. '67 to 26 Sept. '68	232	212	31	14.6	20
Fourth year 27 Sept. '68 to 26 Sept. '69	268	238	26	10.9	30
Fifth year 27 Sept. '69 to 26 Sept. '70	316	255	34	13.3	61
Sixth year 27 Sept. '70 to 26 Sept. '71	361	—	41	—	—
Seventh year 27 Sept. '71 to 27 Sept. '72	361	—	54	—	—
Eighth year 27 Sept. '72 to 26 Sept. '73	398	—	33	—	—
Total	2,319	—	302	—	—

2. The number of such cases with ventricular fibrillation that survived and the number that died.
3. The number of patients with persistent auricular fibrillation or ventricular paroxysmal tachycardia on whom electrical conversion was attempted. (Unfortunately, no record was kept as to the number of successes and of failures.)
4. The number of patients with various degrees of auricular-ventricular heart block.
5. The number of patients who had pacemakers inserted.
6. The number of patients who had pacemaker batteries either charged or removed.

The authors became especially interested in the patients with the various types of medical conditions who had signs and symptoms and clinical findings sufficiently similar to those produced by coronary thrombosis with acute myocardial infarction,

TABLE 2

PATIENTS WITH ARRHYTHMIAS AND HEART BLOCK, AND USE OF ELECTRICAL COUNTERSHOCK AND PACEMAKERS			
	3rd yr.	4th yr.	5th yr.
Patients who developed ventricular fibrillation and defibrillation was attempted	8	15	15
Number successful; patient lived	2	10	8
Number unsuccessful; patient died	6	5	7
Patients with persistent auricular fibrillation or ventricular paroxysmal tachycardia that were electrically converted.	4	2	5
Auricular-ventricular heart block:			
1) Number with first degree block	6	2	7
2) Number with second degree block	0	0	2
3) Number with third degree block	1	0	0
4) Number with complete block	3	4	5
Patients who had pacemakers implanted	2	3	5
Number of patients who had pacemaker batteries changed or removed.	0	2	2

to justify their admittance to this coronary care unit. The total number of such cases admitted to the unit for the third, fourth and fifth years' is shown in Table 1. The actual disease entities amongst this group proved to be quite varied as also did the number of patients for each of the three years that were grouped under the various diseases listed (Table 3).

DISCUSSION

The primary purpose of a special coronary care unit in a hospital is to save the lives of those patients who have recently had a coronary thrombosis with an acute myocardial infarction, and, thereby, lower the mortality rate in this group of cases. It was hoped this goal could be attained by admitting all patients suspected of having had a coronary attack with acute myocardial ischemia or infarction to a unit manned by skillful, especially trained nurses and other attending personnel.

Such a special coronary care unit would be equipped with bedside and central monitoring equipment, contraversion and defibrillation devices, resuscitation equipment, and stocked with the appropriate number of drugs for emergency use.

The doctors, attending nurses, nurses' aides, and orderlies were all given careful instruction in emergency resuscitation techniques, and in the proper and timely use of the special equipment and emergency medications, as this hospital has had no interns or resident physicians. Since the coronary unit was organized over eight years ago, it was necessary to give all nurses working on the unit special intensive training necessary to enable them to recognize all types of arrhythmias thought to commonly precede the onset of the lethal arrhythmias, and to authorize them on their own judgment to immediately

TABLE 3

DIAGNOSES EVENTUALLY MADE ON THE GROUP OF PATIENTS
WITHOUT ACUTE MYOCARDIAL INFARCTS ADMITTED TO THIS
CORONARY CARE UNIT FROM SEPTEMBER 26, 1967 TO
SEPTEMBER 27, 1970

	3rd yr.	4th yr.	5th yr.
Acute myocardial ischemia without myocardial infarction	24	37	30
Congestive heart failure including pulmonary edema	24	31	36
Old coronary heart disease without new myocardial infarction	8	29	not listed
Auricular fibrillation without acute myocardial infarction	19	15	6
Pneumonia	5	2	3
Ventricular tachycardia	4	3	4
Hiatus hernia with pain in chest	1	0	7
Cerebral vascular accident	2	1	4
Emphysema	0	1	4
Acute gallbladder	0	3	2
Cardiac anxiety state	4	0	0
Electrical conversion only	0	0	4
Sinus tachycardia	4	3	0
Paroxysmal tachycardia, unclassified	1	0	3
Adams-Stokes syndrome with syncope	2	0	1
Coronary insufficiency, angina pectoris	0	0	2
Rheumatic fever	2	0	0
Influenza	0	2	0
Asthma	0	2	0
Ruptured spleen	1	0	0
Fractured shoulder	1	0	0
Hypokolemia	1	0	0
Pulmonary infarct	1	0	0
Cancer of the heart	1	0	0
Cervical disc syndrome	1	0	0
Exhaustion	1	0	0
Carbon dioxide narcosis	1	0	0
Complete heart block	0	0	1
Anemia with pain in chest	1	0	0
Staph bacterial endocarditis	1	0	0
Paroxysmal auricular tachycardia	1	0	0
Pulmonary embolus	0	1	2
Excessive digitalis effect	0	1	0
Simple syncope	0	1	0
Narcotic addict	0	1	0
Toxic myocarditis	0	1	0
Uremia	0	1	0
Subarachnoid hemorrhage	0	1	0
Acute gastrointestinal bleeding	0	1	0
Acute hematuria	0	1	0
Muscle strain	0	1	0
Hodgkins' disease	0	1	0
Aortic stenosis	0	0	1

instigate treatment with lifesaving anti-arrhythmic drugs such as Lidocaine,[®] and use the defibrillation and cardioversion equipment when indicated. The charge nurse or the attending nurse on duty on the coronary care unit was authorized by the Executive Committee and the Medical Staff of the hospital to defibrillate or to controvert immediately any patient who developed what appeared to be such a lethal arrhythmia or paroxysmal tachycardia whenever a physician, skilled in this field, was not on the floor.

This system of using specially trained nurses and auxiliary personnel on this coronary care ward has worked out exceedingly well. For example, one of the authors of this paper was the senior charge nurse on this coronary care unit for the five-year period covered in this report.

Each student nurse in the Central Maine General Hospital School of Nursing must spend one month in the first year and one month in the second year, of their training in the coronary care unit. Acute coronary patients receive constant monitoring while on this coronary care unit and far better coronary nursing care than they could hope to receive anywhere else on the general wards of the hospital. This superb nursing care undoubtedly contributes to the improved survival rate, but this is one of the intangible factors almost impossible to measure statistically.

The doctors on the active hospital staff soon recognized these advantages to the care of their patients with acute myocardial infarcts, and now admit essentially all of these patients to the coronary care unit. This trend is reflected in Table 1 that shows only 162 admitted the first year, whereas, now well over 350 are admitted each year. As a result of this increased need, the unit had to be enlarged from a four- to an eight-bed unit.

Tables 1 and 3 show that the doctors on the active staff of our hospital have been properly impressed by those who have been urging that every case with acute chest pain or other symptoms that might be acute coronary in origin should be admitted to the coronary care unit for observation until acute coronary thromboses with myocardial infarctions can be ruled in or out. The first year only 21 such patients out of 162 cases were admitted to this coronary care unit compared to 197 such patients out of 333 in the fifth year.

Most of these patients that turned out not to have acute infarcts might better have been classified as "pain in the chest, non-cardiac." This group could then have been broken down into the following major subdivisions: old coronary heart disease with myocardial pathology, acute myocardial ischemia without infarction, hiatus hernia, congestive heart failure with pulmonary edema, and finally, a large miscellaneous group. The patients with previous coronary thromboses with myocardial pathology

proved to be the largest group without actual new infarcts admitted to this coronary care unit for observation. The number of such cases listed in each category varied from year to year as shown in Table 3.

It is the conviction of the authors that lives have been saved on the coronary care unit over the three-through five-year period covered in this paper. However, as was pointed out by Steele, Busch, and Frost¹ in their paper that covered the first two years of operation of this coronary unit, it is still most difficult to be absolutely certain that a life was saved. Nevertheless, it still seems probable that an acute coronary thrombosis patient with myocardial infarction who developed one of the lethal arrhythmias with a regular sinus rhythm reestablished almost immediately by countershock or Lidocaine (or one of the other arrhythmic drugs) represents a life saved. On the other hand, one cannot help wondering as one stands in front of a monitor and sees a patient go in and spontaneously go out of short runs of all varieties of arrhythmias if some of those patients receiving electrical countershock or arrhythmic drugs might not have spontaneously shifted back to a normal sinus rhythm and recovered.

Pioneers in establishing intensive coronary care units such as Lown et al² and Thomas et al³ reported an apparent significant lowering of mortality rates among the group of patients with acute coronary thromboses with infarctions treated on such specially equipped and staffed units. In general, they attributed the substantial lowering of the death rate to earlier recognition and more prompt, effective treatment of lethal arrhythmias and severe bradycardias.

Subsequently, Klaus et al⁴ published a paper in 1970 in which they pointed out deficiencies in the design of many of the earlier studies. After correcting these deficiencies, they analyzed large groups of patients on the intensive coronary care units treated at five large hospitals and were unable to show any statistically significant lowering of the mortality rate when compared with the mortality rates for patients with similar coronary and myocardial pathology not treated on intensive coronary care wards.

McGuire et al⁵ set up a computerized program using the answers to ninety-two specific questions for each of 770 patients admitted over a thirty-six month period to the coronary care ward at the University of Virginia Hospital at Charlottesville, Virginia. The answers to these 92 questions on each patient were stored in the computer bank and the computer programmed in such a way that the effect of any significant variables that occurred in this group of patients could be evaluated as to its effect on the mortality rate. They were able to show that diabetes, previous congestive failure, and age over 65, out of a group of several risk factors, were the

only three that were associated with a significant increased mortality. A review of their experience suggested that indicators of coronary care unit effectiveness other than the commonly used death rate in acute myocardial infarctions are desirable.

During this three-year period, the coronary care unit standing orders authorized the charge nurse to start Lidocaine medication whenever indicated without waiting for a specific order from the attending physician. She ran off a monitor EKG lead strip and attached it to the nurses' notes to document the type of arrhythmia. Then, she started the medication and recorded the amount given, indicated over what period of time the medication was continued and the response. This was a good method of documentation of use on this ward. Unfortunately for the authors, the Executive Committee of the hospital gave permission for the Record Librarian to remove all nurses' notes from the medical chart as soon as the final discharge summary was completed by the attending physician. The Record Librarian made this executive order retroactive and removed all nurses' notes on the patients' records not already photostated which included the patient records involved in this study. Hence, the authors have no accurate way to obtain data on the frequency of the use of the arrhythmic drugs such as Lidocaine, or information regarding how often the administration was successful or unsuccessful.

Neither do the authors have accurate data on how many of these patients had had one or more previous coronary thromboses with myocardial infarctions. The same holds true for data concerning how many patients were heavy smokers, had diabetes, lipoprotein anemia, or other complicating disorders such as cardiogenic shock or pump failure that might have had an important bearing on survival. The fact, that on this coronary care unit, cardiologists, internists, and qualified general practitioners are permitted to admit and to treat their own patients, made it more difficult to get uniform and comprehensive data on the patients included in this three- through five-year study.

At the beginning of the coronary unit over eight years ago, a ledger was started in which was recorded what, at the time, was considered to be adequate data on each case to be admitted to the unit. In the eight year interim, many new techniques and alterations in treatment for patients with acute coronary attacks with myocardial ischemias or infarctions have come about. Most of these advances and changes have been discussed by experts in this field at the First, Second, and Third National Coronary Care Unit Conferences.^{6,7,8}

Computers have come into the picture in the last three or four years. Not only have great strides been made in the use of computers in the interpretation of the electrocardiogram, but they are being programmed and used to record and store the data that

is fed to them regarding all the varied information about the history, physical examination, X-ray, EKG, and laboratory work on each patient treated in a coronary care unit. When this data becomes available from enough hospitals, and on a sufficiently large number of patients, it should be possible to better and more accurately determine the effectiveness of coronary care units, to determine the values of various drugs and types of therapy, and come up with accurate morbidity and mortality figures.

The difficulties and deficiencies encountered by the authors with the accurate analysis and evaluation of the records on the 816 patients in this study prompt the authors to strongly recommend that a computer program be set up with a standard protocol for use in record storage and analysis by coronary care units for non-teaching hospitals of the 200-400-bed size that do not have intern residents. It should be feasible for the chiefs of coronary units in the 200-400-bed non-teaching hospitals in a state or region to agree on the number of critical items of information which could be collected on each patient admitted to each coronary care unit. This would provide a pertinent data base. Individual coronary units would be able to compare their results with other similar units and to have a much better way to evaluate the efficiency of each unit. McGuire et al⁵ mentioned a revised study form now in use by eleven Virginia community hospitals in a collaboration analysis which requests a "yes-no" to a question concerning prior cardiopulmonary arrest. It should be possible, for example, to devise a much enlarged standardized study program for all patients admitted to the coronary care wards of the non-teaching hospitals in Maine.

Some of the essential items of information that would be needed on each acute coronary patient in a state or region would be: sex, age, time elapsing between onset of attack and arrival at CCU, number of days on unit, kind of arrhythmias, arrhythmic drugs used with results, the number and duration of potentially lethal arrhythmias before regular rhythm was restored by electrical countershock, resuscitation effort if required and the outcome, presence or absence of cardiogenic shock, pump failure, number of previous coronary attacks with infarctions, and other factors such as diabetes, lipoprotein anemia, family history of coronary heart disease, smoking habits, final outcome while on the coronary care unit: i.e., did he or she live or succumb while on the unit. Obviously, such a program for the collection of the data base would need to be worked out by representatives from the participating coronary care units and in conjunction with the expert advisors from the computer system to be used. Organization and execution of such a computerized plan for coronary care units in 200-400-bed non-teaching hospitals could be a suitable project for a Regional Medical Program.

SUMMARY

1. A total of 2,319 patients was admitted and treated on the coronary care unit during the eight years from September 27, 1965 to September 27, 1973 of which number 302 died while on the unit for an overall mortality rate of 13%.

2. A total of 388 patients was admitted to this unit from September 27, 1965 to September 27, 1967 of which number a total of 83 died while on the unit for an overall total of 21.6%. Fifty-six of this 388 did not have acute coronaries with infarcts and 336 did, giving a mortality of 25% among the acute coronary group. Similar data for the first two years has already been analyzed and reported, but it is included in Table 1.

3. A total of 81 patients was admitted to this coronary care unit from September 27, 1967 to September 27, 1970. This group has been studied and analyzed in this paper. There were 91 deaths on the unit for an overall death rate of 11.1%. Seven hundred five patients had acute myocardial infarcts with a mortality rate of 12.8%. One hundred proved not to have acute infarcts and the actual diagnosis has been tabulated in Table 3.

4. The authors have recommended the collection of standardized essential data suitable for storage in a computer on all patients admitted to a coronary care unit in any 200-400-bed non-teaching hospital in a region or state.

5. One thousand one hundred and fifteen patients were admitted to this coronary care unit from September 27, 1970 to September 27, 1973 of which 128 died while on the unit for an overall mortality rate of 11.48%. This group has not yet been studied and analyzed to determine the number in this last three-year interval who had and who did not have coronary thromboses with infarcts.

6. The problems encountered in the study and in the analysis of the 816 patients admitted during the third, fourth and fifth years' along with the absence of easily-obtainable critical data needed in the proper evaluation of this coronary care unit has prompted the authors to suggest that the chiefs of the units in the non-teaching hospitals without interns and resident staffs in Maine formulate a questionnaire with a reasonable number of items amenable to computer analysis to be kept on each patient admitted to all such coronary care units in Maine.

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Sweat Gland Carcinoma

Report of a Case in an Unusual Location and Review of Literature

BEHZAD FAKHERY, M.D., F.A.C.S. and LOUIS N. FISHMAN, M.D., F.A.C.S.

Sweat gland carcinoma is a rare tumor with full malignant capability, first described by Cornil in 1865.⁸ Numerous reports of single or small numbers of cases have since been recorded.^{3,4,5,6,9} In many instances, the sweat gland origin or its malignancy were doubtful. Distant metastases were considered to be infrequent and only 24 metastasizing sweat gland carcinomas were reported in the literature by 1960. The first comprehensive study of a large number of cases was reported by Berg and McDivitt in 1968.¹ (There were 60 cases of their own and 42 seen in consultation.) This was updated by El Domeiri² et al in 1971 and consisted of 83 bona fide cases seen at Memorial Hospital from 1934-69. Anatomic distribution of these tumors is of interest. About 1/3 of these 83 were in the head and neck area, then buttock, axilla, groin, palm and other regions, and only one case over the elbow or upper forearm. The following case is reported because of its unusual location in the forearm.

CASE HISTORY

W.K., a 75-year-old white male, presented himself in the Accident Room on 6/11/73 with an inflamed, reddened, raised, firm mass on the mid-volar surface of the right forearm which measured approximately 6cm. x 3cm. This had been bothering him for about two months when he had hit it while coming off a bus. The lesion itself had been present for about 25 years and had grown progressively larger in this period of time, however, it never had given him any pain until he had struck it two months ago. It was considered to be an inflammatory lesion and was treated with soaks and Ampicillin. On 6/14/73, the patient again presented himself in the Accident Room with no improvement. The lesion now was violaceous and inflammatory in appearance; however, it was not fluctuant. Incision and drainage was attempted; no purulent material escaped and the lesion appeared to be solid. Consequently, a biopsy was taken and reported as a low grade malignancy, probably of sweat gland origin. The patient was admitted to the hospital on 6/20/73 for total excision and graft. His past history and systemic review were unremarkable save for being a deaf mute. On examination, there was a 6x3x4 cm. firm violaceous mobile mass beneath the skin over the flexor aspect of the right mid-forearm with a small unhealed central ulcer. There was no axillary adenopathy. His laboratory work-up was essentially normal. On 6/21/73, a total wide excision of the lesion down to the muscle layers was carried out. A split thickness graft was applied with excellent take and he was discharged 7/3/73. The pathology report showed a segment of skin and subcutaneous tissue which measured 12x7x3 cm. after having been fixed in formalin with an ovoid solid tumor measuring 3.5x3x2 cm. The cut surface revealed a firm, rubbery, bulging, extensively hemorrhagic tumor. The overlying skin appeared grossly intact and moveable.

Sections of the skin and subcutaneous tissue on microscopic examination showed the lower dermis and hypodermis to contain a well circumscribed, partly encapsulated epithelial neoplasm which was extensively hemorrhagic and necrotic. The tumor



Fig. 1. Ap view of the lesion over volar aspect of forearm.



Fig. 2. Lateral view of the lesion.

cells were arranged in nests and cords separated by thin vascularized connective tissue trabeculae. The epithelial cells had round to oval vesicular nuclei and poorly outlined cell borders. In some areas, these cells were arranged in the form of tubules and/or glands. These cells showed only mild pleomorphism and mitosis was rare. Margins of resection were microscopically free of tumor. The diagnosis was consistent with skin adnexal tumor of low grade malignancy.

DISCUSSION

Clinically, the majority of these lesions start as painless red or violet papules, slowly growing to form a solid nodule infiltrating subcutaneous tissue. On rare occasions, they may have a cystic growth.



Fig. 3. Lesion removed, graft in place.

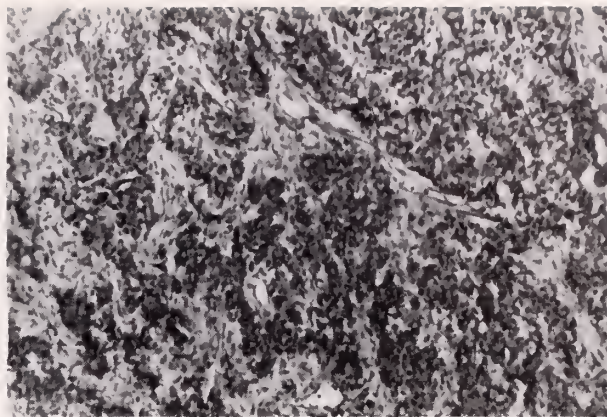


Fig. 4. Microscopic view (low power).

Ulceration is uncommon except in large tumors or recurrent ones. Grossly, it resembles dermatofibroma protuberans, lymphoma, metastatic carcinoma, hemangioma or keloid, and only histological examination is the proof of the diagnosis. These tumors are usually small in size and rarely exceed 5 cm. The largest reported was 15 cm. in diameter. They remain silent and painless for a number of years and only increase in size, ulceration or bleeding following minor trauma or development of metastasis, alarming the patient to seek medical advice. It is almost equally distributed among male and female with highest incidence in the 6th and 7th decade of life.

Berg and McDivitt¹ have classified these tumors into five groups.

1. Low grade differentiated
2. Low grade undifferentiated
3. High grade differentiated
4. High grade undifferentiated
5. Anaplastic small cell

The histological appearance of sweat gland carcinoma can vary considerably even within the same tumor. Therefore, precise classification at times may be difficult. Nevertheless, the metastasis and survival closely correspond, and one can expect a better survival for low grade differentiated or 70% and poor for anaplastic small cell (1/6).

According to Jacobson,⁵ lymphatic dissemination is the primary route when metastasis occurred in almost 100% of the cases and 48% in addition have hematogenous spread.

TREATMENT

Wide local excision with reconstruction when there is no palpable regional node. Highly undifferentiated and anaplastic tumors should have radical excision with dissection of regional lymph nodes. Clinically palpable nodes, regardless of stage of disease and in the absence of distant metastasis deserve lymph node dissection. These tumors are radio resistant, and there is no support that post-

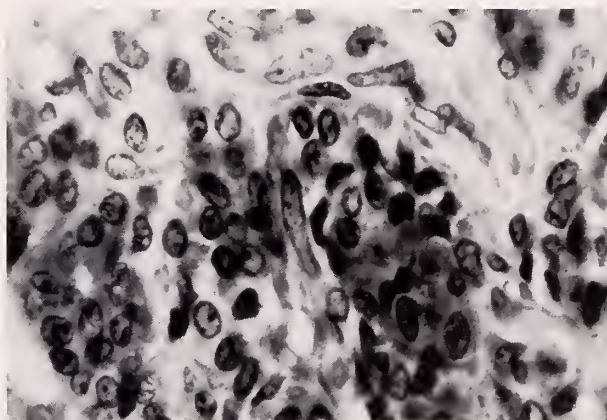


Fig. 5. Microscopic view (high power).

operative radiation is of any value. Chemotherapy has been used in clinically advanced cases. Thiotepa® via injection into the tumor and Cytosan® orally or parenterally have controlled the local growth of the recurrence.

SUMMARY

Sweat gland carcinoma is a rare malignant disease with potential for spread primarily via lymphatics. These tumors occur equally in both sexes and often in the 6th and 7th decade of life. These tumors as a rule arise from areas with abundant apocrine sweat glands. A case of sweat gland carcinoma in an unusual location over the flexor aspect of the right forearm is reported. Mode of therapy is discussed.

ACKNOWLEDGMENT

The authors acknowledge with appreciation the contributions of Drs. Robert Sbaschnig and Ronald Potts.

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Endoscopic Evaluation of Giant Gastric Ulcer

JOHN MILAZZO, M.D.* and GEORGE E. DAVIS, M.D.**

Over the past three years, the quality of gastrointestinal endoscopy has been facilitated by the striking improvements in the quality of instrumentation, especially due to the technology of fiberoptics. Gastroenterologists can evaluate the source of upper GI hemorrhage in better than 90% of the cases and he can also immediately evaluate a gastric ulceration to rule out malignancy. It is no longer necessary to wait 4 to 8 weeks to see if the ulcer heals and take the risk of further growth of carcinoma if this is what the lesion turns out to be. Presented here is a patient referred for gastroscopy by her family physician.

CASE REPORT

The patient is a 43-year-old white married woman admitted to Central Maine General Hospital on 10/17/73 with a history of black tarry stools for 7 days prior to admission. There was a past history of bleeding gastric and duodenal ulcer. She smoked 1 to 2 packs of cigarettes per day and drank about a six-pack of beer per evening. Her initial hematocrit was 26% and stools were positive for occult blood. Except for epigastric tenderness, her physical examination was unremarkable. An SMA 12/60 blood screen was within normal limits. A barium meal revealed a huge ulcer crater on the greater curvature of the antrum which measured at least 7 cm. in length, one of the largest ulcers that the radiology department had ever seen. There were radiating folds compatible with benign ulcer, however, because of the size and location, gastroscopy was recommended (See Fig. 1).

An Olympus GIF Type D Fiberscope was employed. This device has four-way tip control and is easily manipulated to a specific lesion. Examination was done under Cetacaine topical anesthesia to the pharynx and also I.V. Valium® until slurred speech was obtained. A longitudinal gastric ulcer was seen beginning in the upper antrum and extending practically to the pylorus. It was filled with exudate. A long polyethylene catheter was advanced through the instrument and directed at the ulcer crater. A dental Water-Pik device was attached to the catheter and normal saline was jetted through the catheter in a strong pulsating stream (See Fig. 3). The cleaned ulcer base (See Fig. 4) was now readily seen with sharp borders typical of a benign gastric ulcer. The only cause for concern was the nodule seen at the base (see arrow). Biopsy forceps were then advanced through the instrument (See Fig. 5) and specimens were taken from the base and including the nodule as well as from the edges of the lesion. Fig. 6 demonstrates the small amount of bleeding which is typical after a biopsy; also air has been withdrawn from the stomach demonstrating the radiating folds and the penetrating, punched-out appearance typical of a benign ulcer. At the end of the procedure, saline used to debride the ulcer was collected both from the suction port of the instrument and later by a Levine tube after the fiberscope was withdrawn. Both



Fig. 1

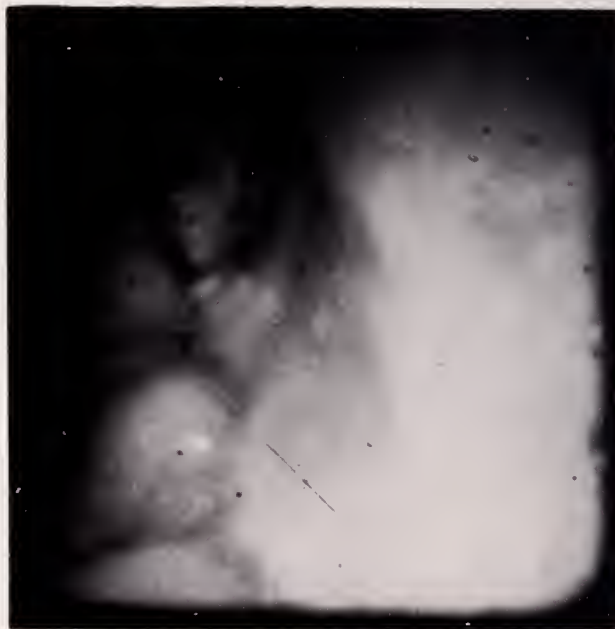


Fig. 2. Pylorus is in the upper left and ulcer crater, filled with exudate, occupies entire right half of photograph.

the biopsies and the cytology in this case were benign. Five weeks after this study, a repeat upper GI series revealed that the ulcer had diminished to 1 cm. in diameter.

It is possible to differentiate between a benign and a malignant gastric ulcer probably between 90 and 95% of the time by techniques mentioned in the above case. In laboratories with extremely fastid-

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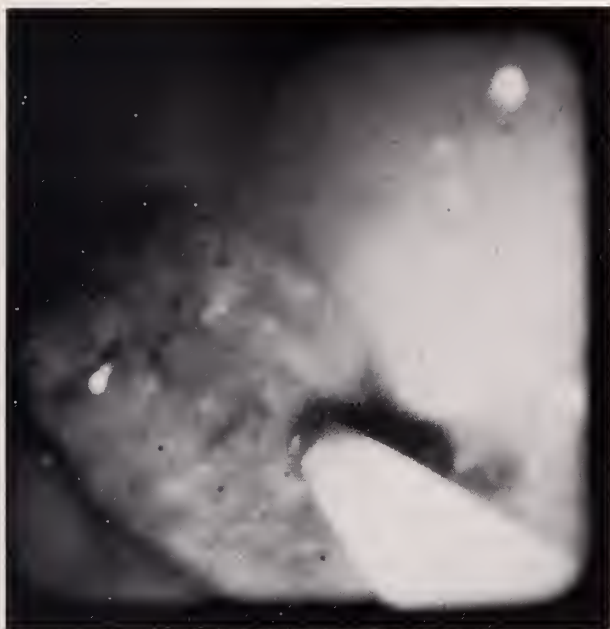


Fig. 3

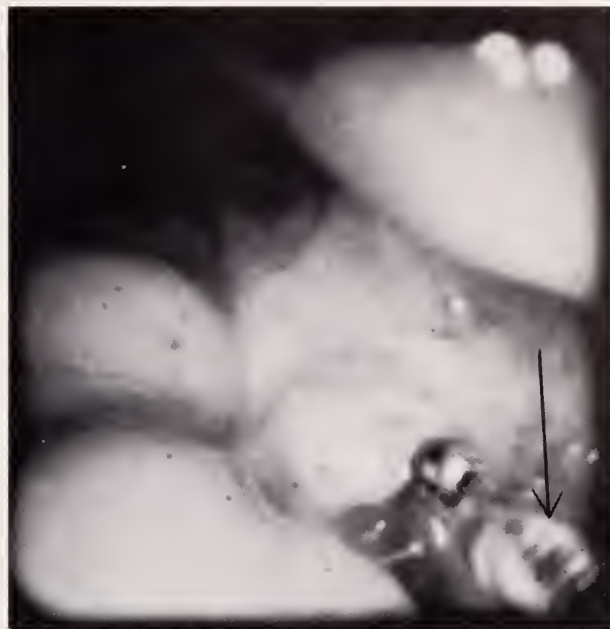


Fig. 5

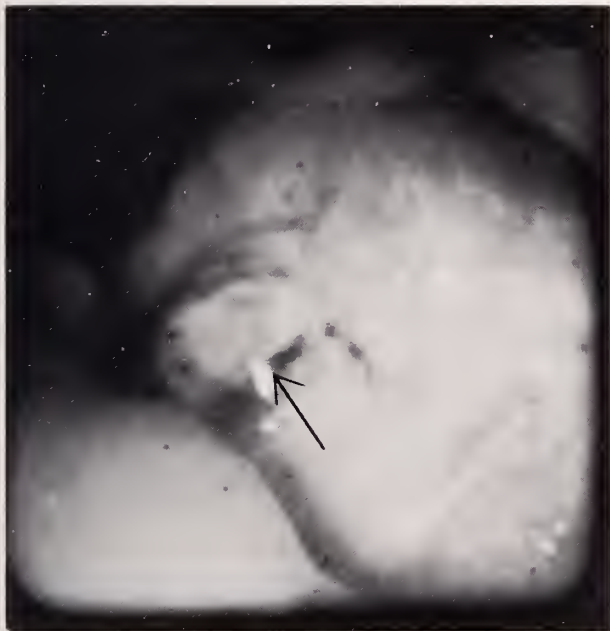


Fig. 4

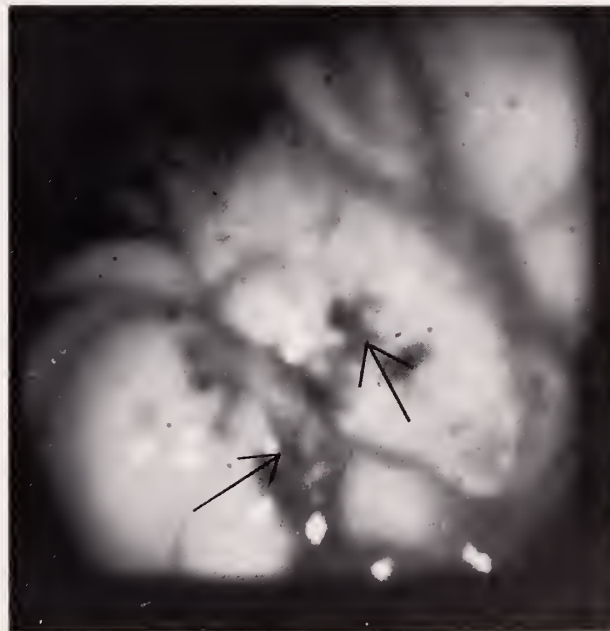


Fig. 6

ious gastric cytology, detection of malignancy can approach 98%. This of course refers to mucosal carcinoma — infiltrative lymphoma or linitis plastica undoubtedly have lower percentages. The features of a benign gastric ulcer as represented above include sharp regular margins and a smooth base with radiating mucosal folds. A malignant ulcer tends to be more irregular and may have mucosal abnormalities which include friability immediately surrounding the ulcer. The base also tends to be nodular and there may be a rigidity or clubbing of the adjacent rugae.

Endoscopy may spare the patient and his phy-

sician several weeks of uncertainty and concern over whether an ulcer is benign or malignant. The physician has at his disposal a means of rapid definitive diagnosis of suspicious lesions.

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Renal Tubular Acidosis

STEPHEN A. SOKOL, M.D. and BETH E. FOSTER, R. N.

Renal tubular acidosis (RTA) is a clinical syndrome characterized by impaired tubular acidification of urine, hyperchloremic acidosis, inappropriately high urine pH, bicarbonaturia and decreased urinary excretion of ammonium and titratable acid. It is a syndrome of multiple causes including genetic. To date, familial RTA has been reported in 18 kindreds. This report presents the 19th family with this disorder and spans four generations.

CASE REPORTS

Y. C. is a 38-year-old lady with history of renal stones beginning at age 15. Nephrolithotomy was performed in 1958, 1965, and 1968. Stone analysis showed predominantly calcium phosphate. She had previously been told that her kidneys contained "numerous stones." Therapy consisted of a low calcium diet and at one time what sounded like an alkalizing solution. This she stopped on her own.

There is a strong family history of renal stones (see Fig. 1).

Physical examination revealed a short, obese female with normal vital signs and a weight of 170 pounds. Intertriginous dermatitis was found but the examination was otherwise normal.

Laboratory data: CBC was normal. Urinalysis showed a specific gravity of 1.007 and stayed between 1.006 and 1.007. There was pyuria probably secondary to collection techniques. Her

urine culture was negative and there were frequent squamous epithelial cells. SMA 12/60 was normal. Protein electrophoresis was normal with a gammaglobulin of 3.03 grams %. Flat plate of the abdomen showed bilateral severe nephrocalcinosis (see Fig. 2). Twenty-four hour collection of urine showed 500 mg. of calcium (elevated), an alpha amino nitrogen of 113 mg. (normal) and a uric acid of 616 mg. (normal). Electrolytes on admission showed a sodium of 141, chloride of 112, potassium at 3.6, bicarbonate of 20 with a venous pH of 7.269. At the same time, a urine pH was 6.640.

Acidification was carried out with ammonium chloride. Her bicarbonate dropped to 16 and her venous pH to 7.182. A concomitant urine pH was 6.30.

Therapy initially consisted of an alkalizing solution containing 75 grams of sodium citrate, 25 grams of potassium citrate and 60 grams of citric acid in a liter of water. Daily dosage was 60 cc. 3 times daily. This changed her venous pH to 7.389, her bicarbonate to 28 and chlorides to 100 (all normal). Subsequently she was changed to a combination of sodium citrate and citric acid in a dose of 30 cc. 3 times daily. On this mixture, her potassium dropped to 3.7 and her bicarbonate to 22. She has subsequently been maintained on her original prescription.

SECOND CASE

J. C., the 13-year-old daughter of the proband, first passed a renal stone in 1971. She subsequently has passed several stones and has had gravel in her urine on other occasions. Intermit-

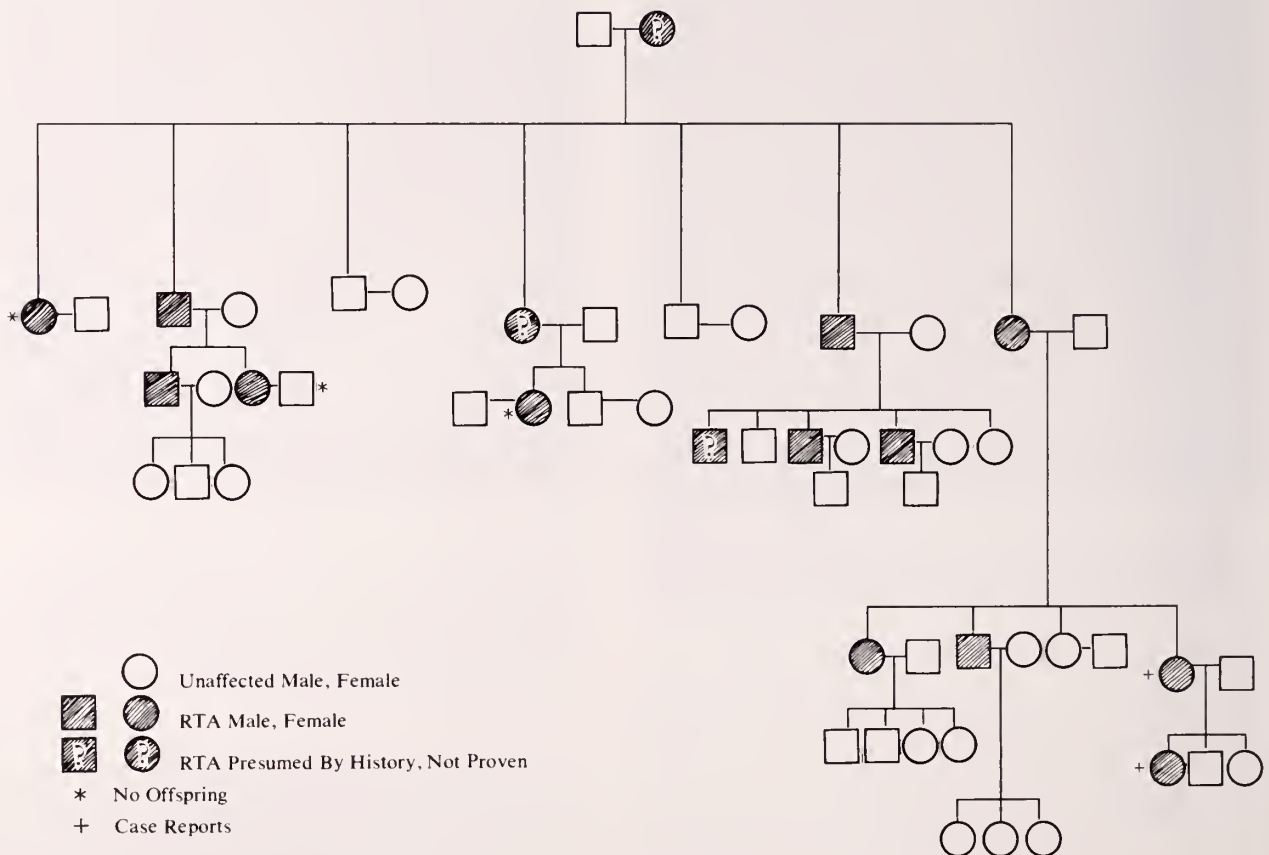


Fig. 1. Family Pedigree

tently over the past 2 years she has complained of flank pain. Therapy has only consisted of a low calcium diet.

Physical examination on admission was entirely normal.

Laboratory data: SMA 12/60 was normal. Twenty-four hour urine had a normal alpha amino nitrogen and calcium. Urinalysis was unremarkable with a specific gravity of 1.007. Electrolytes on admission showed a venous pH of 7.304 with a venous bicarbonate of 23 (slightly low) and a chloride of 101 (normal), a concomitant urine pH was 6.578. With ammonium chloride, the venous pH dropped to 7.26 and her bicarbonate to 21. The urine pH at this time was 6.55. Treatment initially was with the same alkalinizing solution as her mother in a dose of 15 cc. 3 times daily. Later she was changed to the sodium citrate, citric acid mixture. However, after a week her potassium had dropped to 3.4 while her venous pH was 7.401, her bicarbonate 26 and her chloride 105. She was then switched to a solution containing 50 grams sodium citrate, 50 grams potassium citrate and 60 grams of citric acid in a liter in the same dosage.

DISCUSSION

The kidney is the sole regulator of fixed (non-volatile) acid excretion. Acid excretion and reabsorption of bicarbonate appears to be mediated by a single function of the renal tubular cell (Fig. 3). Approximately 85% of filtered bicarbonate is reabsorbed in this fashion in the proximal tubule. In the distal nephron, the remaining bicarbonate is reabsorbed and final acidification of the urine takes place by secretion of hydrogen ions against a large gradient. Normally, virtually all bicarbonate is reabsorbed and acid excretion equals the amount of endogenously produced nonvolatile acid — approximately 1 mEq/kilogram/day in adults and 2 to 3 mEq/kilogram/day in infants and young children. A normal person in the face of a mild acid load as ammonium chloride can reduce his urine pH below 5.



Fig. 2

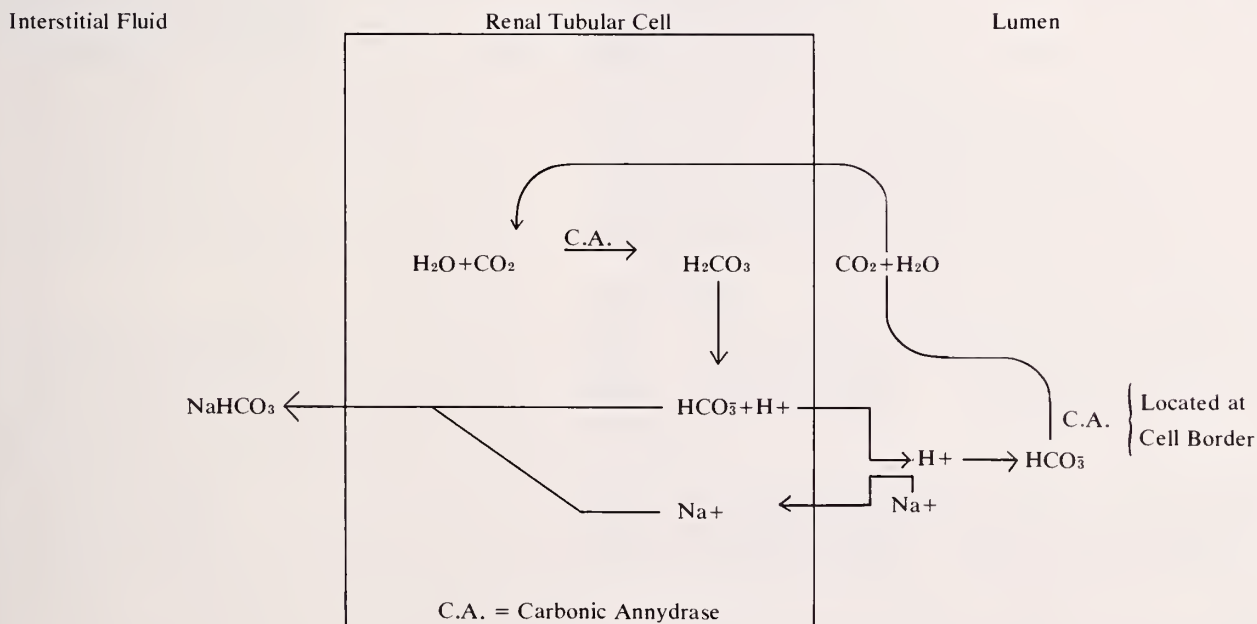


Fig. 3

TABLE 1²

RENAL TUBULAR ACIDOSIS — TYPE I (CLASSIC RTA, GRADIENT RTA)
PRIMARY — as part of no obvious systemic disease: Sporadic — infantile and adult Genetically transmitted
GENETICALLY TRANSMITTED SYSTEMIC DISEASES — galactosemia (after chronic galactose ingestion), hereditary fructose intolerance with nephrocalcinosis (after chronic fructose ingestion), Ehlers — Danlos syndrome, Fabry's disease, hereditary elliptocytosis
METABOLIC DISORDERS — hyperthyroidism with nephrocalcinosis, primary hyperparathyroidism with nephrocalcinosis
HYPERGAMMAGLOBULINEMIC STATES — idiopathic hypergammaglobulinemia, hyperglobulinemic purpura, cryoglobulinemia, Sjogren's syndrome, lupoid hepatitis, lupus erythematosus, sarcoidosis, Hodgkin's disease, tuberculosis
MEDULLARY SPONGE KIDNEY
HEPATIC CIRRHOSIS
DRUG-INDUCED — amphotericin B, vitamin-D-induced nephrocalcinosis
PYELONEPHRITIS (?)
RENAL TRANSPLANTATION (?)

Renal tubular acidosis has been subdivided into two basic types. (Tables 1 and 2). Type II or proximal RTA is characterized by bicarbonate wasting. The proximal tubule is unable to reabsorb the 85% it normally does and characteristically "wastes" approximately 20%. This is presented to the distal tubule and overwhelms its reabsorptive ability so that large amounts of bicarbonate appear in the urine. Typically urine pH will be high. As bicarbonate concentration in the blood falls, the percentage of filtered bicarbonate reabsorbed by the proximal tubule will increase until a blood bicarbonate concentration of approximately 14 mEq/l is reached. At this level, virtually all filtered bicarbonate is reabsorbed and urine pH will fall into the normal range. Thus there is a limit to the degree of acidosis that can develop. These patients require large amounts of alkali as replacement therapy — an amount equivalent to the nonvolatile acid endogenously produced and the bicarbonate lost in the urine. Type II RTA almost always occurs as part of a more complex dysfunction of the proximal tubule, as in the Fanconi syndrome (see Table 2).

Classic RTA (Type I or gradient RTA) is characterized by normal proximal tubular reabsorption of bicarbonate but inability of the distal tubule to secrete hydrogen ions against a large luminal gradient. These patients can never decrease urine pH values below 5.4 under the strong stimulus of a spontaneous systemic acidosis or ammonium chloride. Since bicarbonate is virtually completely reabsorbed, they require only small amounts of alkali to correct their metabolic defects — approximately 1-1.5 mEq/kilogram, only slightly greater than the endogenous acid production (there is a trivial bicarbonate leak).

TABLE 2²

RENAL TUBULAR ACIDOSIS — TYPE II (BICARBONATE-WASTING RTA, RATE RTA)
ASSOCIATED WITH MULTIPLE DYSFUNCTIONS OF PROXIMAL TUBULE: Primary (as part of no obvious systemic disease) Sporadic Genetically transmitted Genetically transmitted systemic disease: Cystinosis, Wilson's disease, Lowe's syndrome tyrosinosis, hereditary fructose intolerance (experimentally induced and short-term fructose ingestion) Metabolic disorders — vitamin D deficiency (?) Metabolic disorders of uncertain genetic status: Hypercalciuric rickets of Friedmann and Dent (children) Pseudo-vitamin D deficiency rickets (children) Disorders of protein metabolism: Nephrotic syndrome, multiple myeloma, idiopathic immunoglobulinuria (Harrison-Blainey syndrome ?), Sjogren's syndrome, amyloidosis Medullary cystic disease Renal transplantation Drugs: Outdated tetracycline, methyl-5-chrome (diacramone), 6-mercaptopurine Heavy metals Lead ?, cadmium ? Experimentally induced (animals) Maleic acid, malonic acid
UNASSOCIATED WITH MULTIPLE DYSFUNCTIONS OF PROXIMAL TUBULE: Primary: Infantile (Soriano-Edelmann syndrome) Adult (York-Yendt syndrome) (vitamin D deficiency ?) Drug Induced: Sulfonamide

This family belongs in the classification of genetic Type I RTA. The inheritance pattern is dominant. This is borne out by the family tree where 16 of 36 members, or approximately 46%, have the disorder. There is no evidence of proximal tubular dysfunction and only small amounts of alkali are required to correct the acidosis:

There are 4 typical modes of presentation:¹

1. Periodic paralysis secondary to decreased potassium.
2. Bone pain and waddling gait — secondary to rickets or osteomalacia.
3. Renal colic.
4. Chance abdominal x-ray.

The potassium loss is usually due to a mild secondary hyperaldosteronism (urinary sodium loss and hypovolemia). After correction of the potassium deficit and alkali replacement, most patients with Type I RTA will not need potassium supplements. A few, however, will require this. Our 2 patients appear to fall in this category. It has been suggested that this might be a specific tubular defect.¹¹ Recently, persistent hyperaldosteronism has been suggested as a mechanism.^{2,12} In 2 patients, urinary aldosterone levels remained elevated despite correction of the acidosis and a normal meas-

Continued on Page 87

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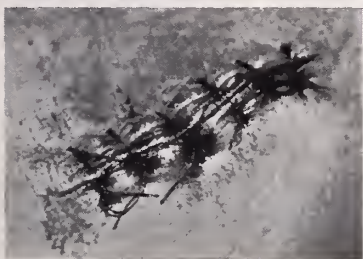
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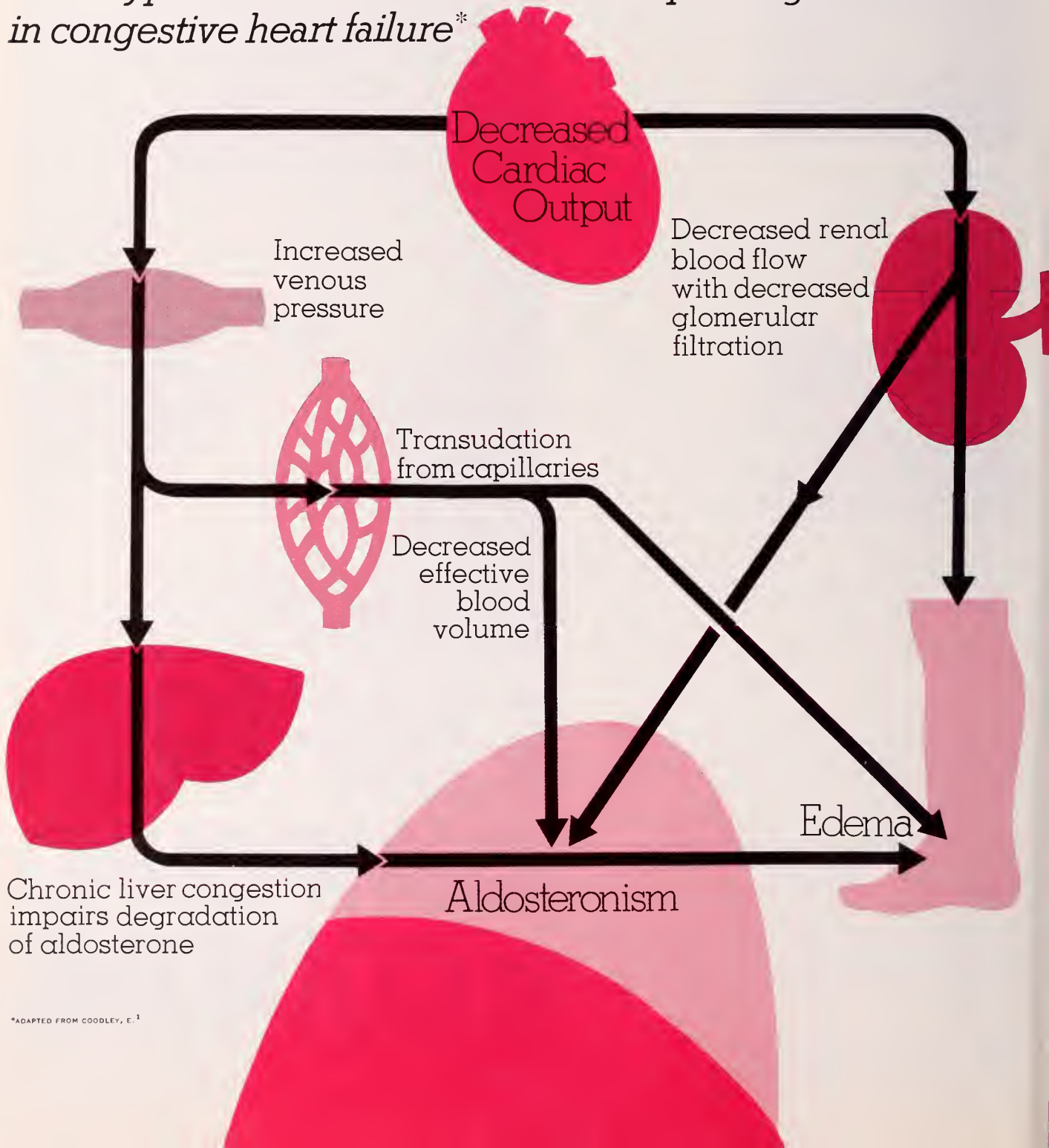


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In congestive heart failure... **secondary aldosteronism**

*How hyperaldosteronism leads to and prolongs edema in congestive heart failure**



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1. As the only diuretic

- Often sufficient alone.
- Produces gradual, sustained diuresis by blocking aldosterone action in the distal renal tubule.
- Avoids potassium loss.

2. As the basic daily diuretic with an "add-on" alternate-day-diuretic ("A.D.D." schedule)

- Can be administered daily as basic therapy with the additional agent (furosemide or ethacrynic acid) given every second or third day.
- Aldactone plus "A.D.D." schedule minimizes potassium deficiency and potentiates effect of "add-on" diuretic.²
- Avoids acute volume depletion and aldosterone rebound.²

3. As a daily diuretic in combination with a daily dose of a thiazide

- Permits daily additive diuretic effect while maintaining potassium balance.

Indications—Essential hypertension; edema or ascites of congestive heart failure, cirrhosis of the liver and the nephrotic syndrome; idiopathic edema. Some patients with malignant effusions may benefit from Aldactone (spironolactone), particularly when given with a thiazide diuretic.

Contraindications—Acute renal insufficiency, rapidly progressing impairment of renal function, anuria and hyperkalemia.

Warnings—Potassium supplementation may cause hyperkalemia and is not indicated unless a glucocorticoid is also given. Discontinue potassium supplementation if hyperkalemia develops. **Usage of any drug in women of childbearing age requires that the potential benefits of the drug be weighed against its possible hazards to the mother and fetus.**

Precautions—Patients should be checked carefully since electrolyte imbalance may occur. Although usually insignificant, hyperkalemia may be serious when renal impairment exists; deaths have occurred. Hyponatremia, manifested by dryness of the mouth, thirst, lethargy and drowsiness, together with a low serum sodium may be caused or aggravated, especially when Aldactone is combined with other diuretics. Elevation of BUN may occur, especially when pretreatment hyperazotemia exists. Mild acidosis may occur. Reduce the dosage of other antihypertensive drugs, particularly the ganglionic blocking agents, by at least 50 percent when adding Aldactone since it may potentiate their action.

Adverse Reactions—Drowsiness, lethargy, headache, diarrhea and other gastrointestinal symptoms, maculopapular or erythematous cutaneous eruptions, urticaria, mental confusion, drug fever, ataxia, gynecomastia, inability to achieve or maintain erection, mild androgenic effects, including hirsutism, irregular menses and deepening voice. Adverse reactions are infrequent and usually reversible.

Dosage and Administration—For essential hypertension in adults the daily dosage is 50 to 100 mg. in divided doses. Aldactone may be combined with a thiazide diuretic if necessary. Continue treatment for two weeks or longer since an adequate response may not occur sooner. Adjust subsequent dosage according to response of patient.

For edema, ascites or effusions in adults initial daily dosage is 100 mg. in divided doses. Continue medication for at least five days to determine diuretic response; add a thiazide or organic mercurial if adequate diuretic response has not occurred. Aldactone dosage should not be changed when other therapy is added. A daily dosage of Aldactone considerably greater than 75 mg. may be given if necessary.

A glucocorticoid, such as 15 to 20 mg. of prednisone daily, may be desirable for patients with extremely resistant edema which does not respond adequately to Aldactone and a conventional diuretic. Observe the usual precautions applicable to glucocorticoid therapy; supplemental potassium will usually be necessary. Such patients frequently have an associated hyponatremia—restriction of fluid intake to 1 liter per day or administration of mannitol or urea may be necessary (these measures are contraindicated in patients with uremia or severely impaired renal function). Mannitol is contraindicated in patients with congestive heart failure, and urea is contraindicated with a history or signs of hepatic coma unless the patient is receiving antibiotics orally to "sterilize" the gastrointestinal tract.

Glucocorticoids should probably be given first to patients with nephrosis since Aldactone, although useful for diuresis, will not directly affect the basic pathologic process.

For children the daily dosage should provide 1.5 mg. of Aldactone per pound of body weight.

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ured plasma volume.

The osteomalacia or rickets develops because of the systemic acidosis, hypercalciuria and the tendency to hypocalcemia. This leads to secondary hyperparathyroidism. Some patients may require calcium and Vitamin D supplements initially until bone healing occurs.

Stone formation seems to be secondary to the decreased urinary citrate concentration and to hypercalciuria. Urinary citrate excretion is decreased in systemic acidosis and increased in alkalosis. Calcium phosphate precipitates in an alkaline urine. Citrate chelates it and thereby increases its solubility. Patients with RTA have little urinary citrate.

The etiology of RTA remains unknown. It was initially felt that this was a specific lack or decrease in carbonic anhydrase, as inhibitors of this enzyme (acetazolamide) will produce similar biochemical abnormalities. However, patients with RTA will respond to the administration of acetazolamide with alkalinization of the urine, increased urinary bicarbonate excretion and intensification of the systemic acidosis.¹ Additionally, in 2 patients, renal enzymes were investigated and carbonic anhydrase was found to be normal.² Gyory and his colleagues have suggested that the defect is in a structural protein involved in membrane transportation — the transportation of hydrogen ions.⁹ Recent studies suggest that increased circulating parathyroid hormone can be a mediator of the renal acidification

process and that hypocalcemia, by leading to elevated levels of the hormone, contributes to the pathogenesis of at least Type II renal tubular acidosis.¹²

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Skilled Nursing Facilities (SNF)

Revised Level of Care Requirements A LEGAL ANALYSIS

JAMES H. BONNEY, M.D., J.D.

BACKGROUND FOR REVISIONS: In October 1972, Congress passed many amendments to the Social Security Act, designated as Public Law 92-603. Some of these amendments changed concepts of the original Medicare Act (Public Law 89-97). One of the areas of care that is affected is the level of care requirements for covered post hospital extended care services. The facilities that provide these services are no longer designated Extended Care Facilities, but Skilled Nursing Facilities. "Extended care services" will continue to be used to refer to services provided by a skilled nursing facility. An outline has been prepared that is a composite of the new laws and newer regulations that should be of aid to physicians and other skilled personnel in understanding the type of care that is reimbursable at the present time. If an admission to an SNF does not seem to fall within the criteria required, considerable consideration should be given to the possibility that reimbursement may not be made.

CONCEPT OF SKILLED CARE

1. Post hospital services that are needed on a daily basis and;
 - a. the plan requires the skills of a licensed nurse, or
 - b. requires the supervision of a licensed nurse.
 2. Post hospital services that require other skilled rehabilitation services which as a practical matter can only be provided in a skilled nursing facility on an inpatient basis. (This service is not required to be daily, but only five days a week.)
3. covered hospital care;
 2. Has to be related to any conditions for which inpatient hospital care was required;
 3. Transferred to SNF within 14 days of discharge from a hospital if SNF bed available;
 4. Transferred to SNF within 28 days of discharge from a hospital if no SNF bed available at time of discharge;
 5. If the transfer to SNF is not medically appropriate at the time of discharge then the 14 day requirement does not apply. (It should be medically predictable that the individual will require SNF care for treatment of a condition for which he received covered inpatient hospital care.) (Predictability is the important aspect in this situation. Future care should be documented at time of discharge. Some cases, such as fractures, may be easily predictable; but in other cases, such as patient's with cancer, it is nearly impossible to predict when they may eventually need SNF care.)

CONSIDERATIONS OF SKILLED CARE

1. The individual patient's medical needs;
2. The specific services required to fill these needs; and
3. The health personnel required to adequately provide these services.
4. The patient's eligibility for benefits depends on his need for skilled care and not on his potential for recovery.

COMPONENTS OF SKILLED CARE

1. Observation and assessment of the total needs of the patient;
2. Planning, organization and management of a treatment plan involving multiple services where specialized health care knowledge must be applied in order to obtain the desired result; and
3. The rendering of direct services to a patient where the ability to provide the services requires specialized training.

COVERAGE OF SKILLED CARE

1. Has to have met three continuous days of
6. If the transfer is from SNF to another SNF or back to the same SNF, it has to be accomplished within 14 days, even if no bed is available. Patient would have to be hospitalized for three days. Therefore, a patient cannot even stay in the same SNF and be called an intermittent care patient for over 14 days and put back on covered care. (This concept does not seem logical and many officials are upset with it).
 7. *Skilled Services* — For Medicare purposes, a skilled service is one which must be furnished by or under the direct supervision of skilled personnel to assure the safety of the patient and achieve the medically desired results, or where the planning and management of a treatment

plan requires the skills of a licensed nurse, such services would constitute skilled nursing services. Ordinarily the planning and management of a treatment plan, which does not involve the furnishing of skilled services requires the skills of a nurse only where the facts of the case establish that the *aggregate of such unskilled services*, when considered in light of the patient's condition(s), necessitates the regular daily involvement of a licensed nurse to ensure the patient's recovery and/or medical safety. (When there is skilled supervision there usually should be more than one visit per day to that patient. There should be a skilled person available, who has the capability of understanding the various services, their effect on the patient and the relationship of their effect on each other.)

8. *Other Skilled Rehabilitation Services* — Physical therapy services for Medicare purposes are those services furnished a patient which meets all of the following conditions (does not need the presumption of skilled nursing care):

- a. The services must be directly and specifically related to an active written treatment regimen designed by the physician after any needed consultation with the qualified physical therapist;
- b. The services must be of such a level of complexity and sophistication, or the condition of the patient must be such that the judgment, knowledge and skills of a qualified physical therapist are required;
- c. The services must, in fact, be performed by or under the supervision of a qualified physical therapist, i.e., a qualified physical therapist must be present on the premises when services are rendered;
- d. The services must be provided with the expectation, based on the assessment made by the physician, of the patient's restoration potential after any needed consultation with the qualified physical therapist that the patient will improve significantly in a reasonable, and generally predictable period of time or must be necessary to the establishment of a safe and effective maintenance program required in connection with a specific disease state;
- e. The services must be considered under accepted standards of medical practice to be specific and effective treatment for the patient's condition; and
- f. The services must be reasonable and necessary to the treatment of the patient's condition.

SPECIFIC SERVICES WHICH ARE SKILLED
(not limited to the following):

1. Frequent intravenous and intramuscular in-

jections (not those which can usually be self-administered, such as the well regulated diabetic on insulin).

2. Intravenous feedings.
3. Levine tube and gastrostomy feedings.
4. Naso-pharyngeal aspiration.
5. Colostomy or ileostomy (immediate post-operative period following a newly created or revised opening, until patient learns the required care).
6. Insertion or replacement of urethral catheters (immediate post-operative with repeated catheterizations).
7. Catheters in other parts of the body, such as bile ducts, chest cavity, etc.
8. Skin care of extensive decubiti or widespread skin disorders (look at doctor's specific orders for this care).
9. Dry sterile dressings involving prescription medications.
10. Oxygen therapy — initially.
11. Restorative nursing which is prescribed by the physician, designed to restore functions which have been lost or reduced by illness or injury, and are a type whose performance requires the presence of a licensed nurse either directly or in a supervisory capacity on a daily basis. (The 24-hour continuous skilled nursing care is no longer a requirement.)
12. Other skilled rehabilitation services are covered when it is directed by the physician in consultation with a physical therapist who supervised the therapy and *as a practical matter* has to be on an inpatient basis. (This concept of care means that as a practical matter the services could not be given in a lesser care facility or agency. The fact that reimbursement could not be made under the program for the services would not be a basis for determining that the needed care could be provided only in a SNF.)

SPECIFIC SERVICES THAT USUALLY ARE NOT SKILLED CARE (need other evidence):

1. Care of plaster casts
2. Braces and similar devices
3. Restraints
4. Irrigation of urinary catheters
5. If patient is capable of independent ambulation, dressing, feeding, hygiene
6. If the patient has outside privileges
7. If the stay is for uncomplicated post-cataract surgery convalescence
8. If the stay is for a fracture of an upper extremity
9. If the diagnosis is chronic in nature
10. Return to the hospital preceding the SNF stay occurred shortly after the expiration of 60 days from the last discharge from hospital or SNF
11. Hospitalized over 60 days

Continued on Page 95

Special Article

Rheumatic Fever 1: Prevalence

The Rheumatic Fever Committee of the Maine Heart Association would like to call attention again to the threat posed by rheumatic fever. Although rheumatic fever is the only cause of cardiovascular disability that is completely preventable, it still occurs with unacceptable frequency. In 1968, in the United States, there were 16,000 deaths from rheumatic fever and chronic rheumatic heart disease and over 232,000 hospital admissions directly related to rheumatic fever and/or heart disease. An estimated 1.5 million persons in this country have rheumatic heart disease and over 100,000 new cases develop each year. The estimated cost of physicians' visits for rheumatic fever and rheumatic heart disease in 1969 was 28 million dollars.*

In the summer of 1971, at the direction of the Rheumatic Fever Committee of the Maine Heart Association, a survey was conducted to determine the extent of the rheumatic fever problem in the State of Maine. Thirty-three of fifty-five Maine hospitals queried reported for the year 1970 439 hospital admissions due to rheumatic fever and/or heart disease.

Between January 1969 and July 1971, 78 open heart operations were performed at the Maine Medical Center for relief of rheumatic heart disease.

At the time of the survey, there were 791 patients with previous rheumatic fever registered with the Maine Heart Association Rheumatic Fever Prevention Program who were receiving low cost penicillin prophylaxis.

During the year 1971, the State laboratory in Augusta processed 21,922 throat cultures, 4,435 of which were positive for Group A streptococci. (In 1964, 2,171 cultures were processed.)

The Division of Child Health was regularly following 38 children with rheumatic heart disease in cardiac clinics throughout the State.

These figures do not adequately express the importance of the rheumatic fever problem since, unlike any other forms of heart disease, rheumatic heart disease affects children and severely affects the quality of life during the most productive years.

A marked decrease in the instance of rheumatic fever can be achieved through the vigorous application of currently available methods. The applications of these methods depends primarily on informed and alert physicians and to this end, the committee will present in subsequent issues of this journal, brief discussions dealing with the prevention, diagnosis, and treatment of rheumatic fever, the low cost penicillin program of the Maine Heart Association and presentation of one example of community-wide streptococcal infection control program.

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*Report of Inter-Society Commission for Heart Disease Resources; prevention of rheumatic fever and rheumatic heart disease. Circulation May 1970.

Reserve these dates . . . June 15-18, 1974

121st Annual Session

Maine Medical Association

Shawmut Inn — Kennebunkport, Maine

The Program for the Annual Session includes . . .

SCIENTIFIC SESSION SPEAKERS —

- Robert H. Brown, M.D. of Bangor
- Jacob Lokich, M.D. of Boston
- Joseph C. McAlhany, Jr., M.D. of Fort Sam Houston
- Norman Jaffe, M.D. of Boston
- Frederick B. Jordan, M.D. of Oklahoma City
- Lowell J. Levine, D.D.S. of Huntington Station
- William P. Castelli, M.D. of Framingham

SPECIALTY GROUP SPEAKERS —

- Barry L. Fanburg, M.D. of Boston
- Warren C. Baldwin, M.D. of Portland
- Henry H. Work, M.D. of Washington
- Bruce Trembly, M.D. of Waterville

EVENTS OF INTEREST —

Saturday, June 15

2:00 P.M. First Meeting of the House of Delegates

Presentation of the A. H. Robins' Physician Award for Community Service

Presentation of the Maine Blue Cross and Blue Shield "Award of Appreciation"

Sunday, June 16

9:30 A.M. Reference Committee Meetings

2:00 P.M. Second Meeting of the House of Delegates

Election of President-elect and Executive Committee District Members

General Assembly (Immediately following the House of Delegates)

SUNDAY EVENING — LOBSTER BAKE

MONDAY EVENING — ANNUAL BANQUET

TUESDAY EVENING — GOLF PRIZES



HEALTH MAINTENANCE ORGANIZATION CONCEPT GROWING

Development of Health Maintenance Organizations is a part of the Blue Cross System's charge to provide sound service at a reasonable cost, according to Blue Cross Association President Walter J. McNerney. And with or without financial help from the recently passed HMO Bill, the System "intends to continue our efforts" in this area.

Development of HMO's has accelerated recently, McNerney observed, and whereas Blue Cross Plans were involved with only five prepaid group practices as recently as three years ago, 22 plans are now involved in 42 prepaid group practice programs covering close to one million members. An additional 41 Blue Cross Plans are involved in various stages of HMO activity.

"Unique" advantages Blue Cross Plans can offer as HMO's include access to the market, the administrative capacity to do the job and the capacity to provide out-of-area coverage and transfer, he added. In an HMO, there is an "undeniable lesser use of hospitalization" and the potential of an HMO for improving quality and preventive services is great. The Blue Cross system has a plus in marketing the HMO because the system is traditionally non-profit and community oriented.

Under the new HMO Act, there will be \$375 million in Federal funds available for budding Health Maintenance Organizations for planning and development; however, the HMO's must adhere to rigid ground rules. The enrollment must be open to a complete community mix, and more important, it must offer the following basic health services: physicians' services, including consultant and referral services; inpatient and outpatient hospital services; emergency health services; mental health services in crises; treatment and referral for alcohol and drug addiction; diagnostic laboratory and diagnostic and therapeutic radiologic services; at-home health services; preventive health services, including family planning and infertility services; and preventive dental care and eye examinations.

"The Blue Cross System believes the HMO Bill, signed by the President in December, is essentially good," McNerney noted. "However, no existing HMO in the country can meet the demands of the act and that may slow their penetration." He predicted that the HMO penetration of the market will probably not be higher than 25% within the next five years.

The Department of Health, Education and Welfare regards only 30 of today's 128 HMO's as successful prototypes and not even they qualify fully as HMO's under the new legislation. How much adjustment will be required of these existing HMO's will be determined by task forces of government and industry experts.



DEAN H. FISHER, M.D.
COMMISSIONER

State Of Maine

Department of Health and Welfare

Sudden Infant Death Program in Maine

MRS. HELEN M. ZIDOWECKI*

"Sudden Infant Death Syndrome is the most common cause of death among children between the ages of two weeks and one year, and accounts for the death of approximately 60 perfectly healthy and potentially productive children in Maine every year. Medical research has identified many facts about the cause and effects of this problem which is not presently preventable. The greatest impact of this problem is the emotional problems it creates for the surviving parents. Compassionate counseling of parents has been shown to prevent many emotional problems. This legislation would serve to: (1) Further medical knowledge about the problem by creating a reporting mechanism and (2) Allow for rapid identification of parents in need of counsel."

This was the "Statement of Fact" on the Maine Sudden Infant Death Bill, an addition to the *Health and Welfare Laws, Title 22, Section 2026*. Death without medical attendance. The bill, which was passed by the 106th Legislature, states that when a child under 3 years of age dies without medical attention, the medical examiner shall make a special report to the Chief Medical Examiner (Charles Branch, M.D., Auburn) within 72 hours. This report includes the circumstances surrounding death, gross findings at autopsy, or why an autopsy was not performed. The Chief Medical Examiner may forward this report to the Bureau of Health, Department of Health and Welfare. The report is sent to the Director, Division of Public Health Nursing. Nurses from the Division of Public Health Nursing or local agencies contact the SIDS family.

Since the bill went into effect in October 1973, an average of one SIDS per week has come to the attention of the Division of Public Health Nursing from personal contacts in communities, from obituaries of children under 3 years old, from the Chief Medical Examiner's Office, and from the Maine Chapter of the National Foundation of Sudden Infant Death. The report of the death of a child may be discussed with the local medical examiner, phy-

sician or funeral director before the family is contacted.

It may not be possible to obtain autopsy results or definite diagnosis of SIDS before the nurse contacts the family. However, any sudden, unexpected death of an essentially normal child can be suspect. The nurse may contact the parents on that suspicion. Timing is important in this program. The nurse should contact the family as soon as possible, hopefully within a week.

Problems in the current procedure for identifying SIDS in Maine seem to be: (1) not all medical examiners sent the required reports to the Chief Medical Examiner; (2) terms such as Sudden Infant Death or "crib death" may not be used on reports, even though the circumstances indicate that this is probably the cause of death; (3) undoubtedly not all SIDS are coming to the attention of the Division of Public Health Nursing because of #1 and #2, and because not every death is listed in obituaries, a major source of information.

Nurses contact the families to discuss SIDS. Literature, usually publications by NFSID, may be distributed to the family and others connected with the SIDS. In about half of the SIDS to date, nurses have been involved with others besides parents of the child — grandparents, aunts and uncles, other children in the family and babysitters.

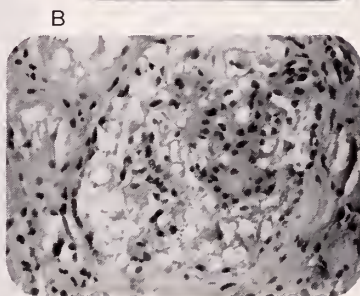
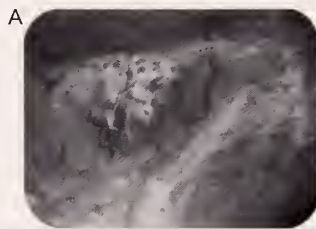
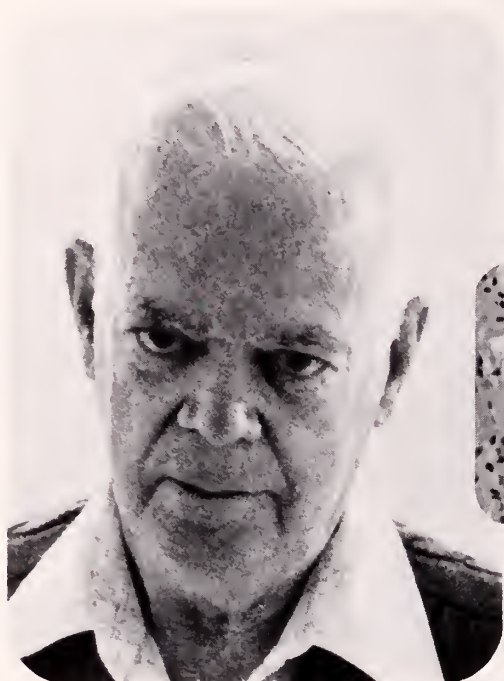
As the nurse talks with the family, she elicits, informally, information about the condition and behavior of the child in the hours preceding death, the situation surrounding death, and the reactions of family and the persons involved with the child's death. Information gathered to date reflects similar statistics to those published by NFSID. The ages have ranged from 3 weeks to 9 months, with the largest number occurring at 4 months. All have been males except one. If symptoms were displayed prior to death, they have been change in eating patterns, irritability and "colds." All have occurred while the child was sleeping.

The nurse may make several visits to a family. She may suggest that the family seek counseling

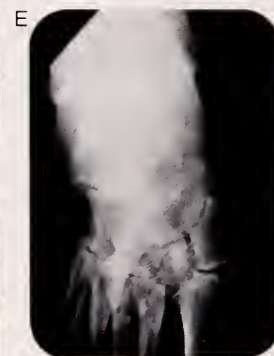
*Director of Public Health Nursing, Department of Health and Welfare, Augusta, Maine 04330.

Continued on Page 95

What's wrong with this "patient"?*



NOTE:
a variety of typical diagnostic
signs from three patients are
combined.



Supplementary Vitamins in Chronic Disease Therapy

Diet, alone or in association with oral hypoglycemics or insulin, can usually lower blood sugar. But high blood sugar is only part of the diabetic patient's problem. Because if he fails to adhere to the prescribed diet and limits his diet too strictly, vitamin deficiency may result. In fact, any patient with chronic disease, poor diet and insufficient appetite—including the geriatric patient—may be heir to vitamin deficiency.

Therapeutic Berocca Tablets, when indicated, can supplement inadequate dietary supplies of essential B-complex and C vitamins in prolonged or wasting diseases. The 500 mg vitamin C in each tablet can help make certain the patient is getting an adequate supply of this agent, a substance involved in tissue repair and collagen formation, among other actions.

When nutritional
supplementation is indicated
in chronic disease

BEROCCA[®] TABLETS IS THERAPY

With balanced, high potency
vitamin B-complex and 500 mg vitamin C
Virtually no aftertaste or unpleasant odor
Low priced Rx formula

*Diagnosis appears on next page.

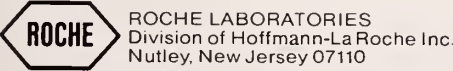
Please see next page for a summary of
product information.



DIAGNOSIS: Certain manifestations of diabetes mellitus are revealed in these photographs: (A) fundus shows neovascularization and marked retinal scarring (male, age 23); (B) biopsy of kidney shows early diabetic intercapillary glomerulosclerosis (male, age 35); (C) photos 1 & 2 show edema and loss of the plantar arch (female, age 59); (D) lateral x-ray (same patient) shows dropped arch and hypertrophic and destructive changes of tarsal and metatarsal joints (Charcot's arthropathy); (E) AP confirms hypertrophic and destructive changes in (D).

Please see complete product information, a summary of which follows:
Each Berocca Tablet contains:
Thiamine mononitrate
(Vitamin B₁) 15 mg
Riboflavin (Vitamin B₂) 15 mg
Pyridoxine HCl (Vitamin B₆) 5 mg
Niacinamide 100 mg
Calcium pantothenate 20 mg
Cyanocobalamin (Vitamin B₁₂) 5 mcg
Folic acid 0.5 mg
Ascorbic acid (Vitamin C) 500 mg

Indications: Nutritional supplementation in conditions in which water-soluble vitamins are required prophylactically or therapeutically.
Warning: Not intended for treatment of pernicious anemia or other primary or secondary anemias. Neurologic involvement may develop or progress, despite temporary remission of anemia, in patients with pernicious anemia who receive more than 0.1 mg of folic acid per day and who are inadequately treated with vitamin B₁₂.
Dosage: 1 or 2 tablets daily, as indicated by clinical need.
Available: In bottles of 100.



SKILLED NURSING FACILITIES (SNF), REVISED
LEVEL OF CARE REQUIREMENTS, A LEGAL
ANALYSIS — *Continued from Page 89*

- 12. Discharge from SNF after 100 days
- 13. Initial hospitalization was 3-5 days
- 14. General methods of treating incontinence
- 15. General methods of treating constipation (unless there is rectal disorder or there is manual removal of fecal material)
- 16. Apical pulse unless cardiac arrhythmia or pacemaker

SPECIFIC SERVICES THAT ARE NOT SKILLED CARE

- 1. Administration of routine oral medications, eye drops and ointments
- 2. Skin care to prevent decubiti
- 3. Frequent laboratory tests
- 4. General maintenance of colostomy, ileostomy or urinary catheters
- 5. Dressings for non-infected post-operative or chronic wounds
- 6. Bathing and application of creams
- 7. Routine enemas
- 8. Routine incontinence care
- 9. Use of heat for palliative or comfort purposes
- 10. Maintenance of medical gases
- 11. Routine pulse, BP, or temperature

53 Chadwick St., Portland, Maine 04102

DEPARTMENT OF HEALTH AND WELFARE
Continued from Page 93

from mental health clinics, clergy, the Maine Chapter of NFSID, or other appropriate resources. To date, nurses have worked through the Maine Chapter to establish contacts with people or chapters in at least three other states.
The success of this Maine SIDS Program depends on the cooperation of the medical examiners and physicians in identifying the SIDS families.

ACKNOWLEDGMENT
This paper was written in co-operation with the Maine Chapter of the National Foundation for Sudden Infant Death, Inc.

Director for Department of Health Manpower/Education in a non-profit community based health corporation (non-university connected). M.D. or equivalent degree or experience. Please reply to Medical Care Development, Inc., Dept. A, 295 Water Street, Augusta, Maine 04330, or call collect (207) 622-7566, Ext. 6.

News, Notes and Announcements

State of Maine Board of Registration of Medicine Physicians Licensed to Practice Medicine and Surgery in the State of Maine

Through Examination

Ahmadi, Manocher; Al-Ali, A. Majied; Bahadir, Ilhan; Basecki, Tadeusz; Beup, Leonardo P.; Bhatia, Harmohinder S.; Bhimani, Uttara G.; Buterman, Irving; Butt, Khalid M.; Caruso, Donald A.; Cassone, Gary J.; Chitre, Sharadchandra R.; Chou, Chia Y.; Danon, Marco; De La Mata, Ruby N.; Dinakarrao, Hassan S.; Fenelon, Serge; Fernanado, Benedict L. L.; Fernando, Kumudhini; Flores, Silvia E.; Galanternik, Eduardo O.; Ganaraj, Posavanike S.; Ganesharajah, Manickam; Gardere, Marcel; George, Sebastian P.; Gill, Gurdev S.; Guttman, Franklin; Herskowitz, Jacob; Hong, Changgi D.; Hose, Aron; Hsieh, Hwa-Hsin; Islam, Rashidul; Kagali, Vidyadhara A.; Kale, Prabhakar B.; Karp, Marvin I.; Katz, Jeffrey; Khonsary, Mohammed A.; Kim, Boo H.; Kim, Stephen S. H.; Kim, Jae-Chil; Kingra, Gurpal S.; Klautky, Albert S.; Koch, Ronald B.;

Kuruvilla, Manjummelkudiyil P.; Ladha, Gwendoline L.; Ladha, Shiraz H.; Larmor, Frederick J. R.; Lee, Chunghei; Lichy, Jacob; Lim, Dai M.; Magavi, Shivayogi V.; Major, Byron J., Jr.; Malhotra, Yash P.; Mangat, Malkiet S.; Manohar, Velandy; Mattar, Adel G.; Moghrabi, Albert; Moylan, Fergus M. B.; Nisar, Mohamed I.; Park, Soo A.; Patel, Kanaiyalal M.; Patel, Vinod M.; Patrick, Michael J. C.; Petrillo, John A.; Posada, Humberto; Purohit, Ramesh C.; Raghupathy, Kade N.; Rai, Uma S.; Rajadhyaksha, Dilip P.; Ramchandani, Deepika; Ranin, Benjamin R.; Rao, Gadahad M.; Re, Stephen T. L.; Reddy, K. N. Gopala; Reddy, Vijaya K.; Rosengarten-Schoenman, Helen; Saenger, Paul H.; Saulog, Marietta A.; Schwan, Stefan W.; Shafi, Mohammad; Shamasunder, Hesaraghatta K.; Shamsi, Rahim; Sonpal, Girish M.; Sorek, Moshe; Sramka, Jan; Srihari, Arudi; Stammers, Thomas W.; Supan, Angelina A.; Tannen, Richard C.; Tantivess, Apichai; Tee King, Plaridel S.; Treder, Joanna; Vadher, Dinesh; Wang, Jen-Min; Wu, Der S.; Youssef, Amoun K.; and Zeig, Steven.

County Society Notes

CUMBERLAND

The 382nd meeting of the Cumberland County Medical Society was held on December 20, 1973 at the Holiday Inn, Downtown, Portland. Sixty-nine hardy members and guests were in attendance, despite freezing rain and ice-covered streets. Following the social hour, a steak dinner was served.

The business meeting was called to order by the President, Dr. Douglas R. Hill at 8:00 p.m. Reading of the minutes was omitted. Drs. Hugh Phelps and Michael Lamb were voted into the membership.

Applications from Drs. William Maxwell, Stephen Klein and Edward Katz were given first readings and forwarded to the executive committee.

Dr. Andrew Melkis was transferred to affiliate membership. Drs. Raymond Dominici and Richard Giustra were allowed to join Lincoln-Sagadahoc County Medical Society. Since they are residents of Cumberland County, Maine Medical Association bylaws require our approval.

Endorsement of the Family Practice Residency at the Maine Medical Center was approved.

Drs. Winton Briggs and Clement A. Hiebert introduced Mr. Hamlin of New Dawn Communications Systems, who in turn described the current status of radio paging systems and demonstrated their use. A questionnaire will be sent to the membership.

Dr. Wesley J. English, who was the chairman of the United Fund Committee for 1973, reviewed the problems related to fund raising and suggested that Cumberland County Medical Society appoint a committee to deal with this problem for the next United Fund Campaign.

Dr. Robert E. McAfee then reported on the A.M.A. Clinical Session held last month in Anaheim, California. The main topic of interest and discussion was PSRO. For a complete report on this important issue, read the January 1974 issue of the Maine Medical Association Journal.

Dr. McAfee also briefly commented on the future or re-licensure and re-certification. We may see further representation of specialty certification organizations within the A.M.A. House of Delegates.

It was announced that the State of Maine will be considered a

single PSRO area by H.E.W.

Dr. Howard P. Sawyer, Jr., who is our representative to the M.M.A. executive committee, reported on the recent Maine Medical Association House of Delegates' meeting at Bangor. Cumberland County delegates and alternates were conspicuous by their absence.

Among the items on the agenda were the Tel-Med Network in Farmington, approved for our Continuing Education Committee to inspect and accept programs and courses for credit by the A.M.A., and a possible method of financing the project.

The House of Delegates reaffirmed its stand of June 1973 concerning PSRO in Maine. A group has been incorporated to function as the PSRO affiliate of the Maine Medical Association which will review cases throughout the entire State. Dr. Richard T. Chamberlin, chairman of the Committee on Continuing Education and chairman of the Peer Review Committee of the Maine Medical Association, will serve as chairman of this new organization.

There being no further business to transact, the meeting was adjourned at 10:00 p.m.

The 383rd meeting of the Cumberland County Medical Society was held on January 17, 1974 at Valle's Restaurant. Two hundred members and guests attended. Our guests, members of the Auxiliary, added a festive touch to the occasion. Following the social hour, an excellent roast beef dinner was served.

A brief business meeting was called to order by Dr. Douglas R. Hill. The reading of the minutes of the last meeting was omitted. Drs. Henry Richards and Robert True were accepted as transfer members into the Society.

Applications from Drs. Edward Katz, Stephen Klein and William Maxwell were processed and these gentlemen admitted to membership.

Approval of the transfer of membership from Cumberland County to Lincoln-Sagadahoc County Societies by Dr. Sunny J. Bullington was given.

The poll of the membership concerning repeal of the PSRO legislation was attempted, however, it is felt that this should be accomplished by a written questionnaire rather than by voice vote.

Following adjournment of the business meeting, Dr. Robert E. McAfee introduced our guest speaker, Dr. Clayton Thomas of Dingley Dell, a confirmed Balloonatic, who presented amusing and interesting movies and commentary regarding his avocation of ballooning.

ALFRED E. SWETT, M.D., *Secretary*

PENOBSCOT

A meeting of the Penobscot County Medical Society was held on January 15, 1974 at Sings Restaurant in Bangor, Maine. The meeting was opened by the President, Dr. Dexter J. Clough, 2nd. The minutes of the December meeting were presented and approved as read.

Under new communications, a request was received from Dr. Paul A. Fichtner, President of the Maine Medical Association, requesting a polling of the membership with regards to PSRO. This communication was to be discussed under new business. A letter from Mrs. Patricia Bergeron requesting the naming of a representative from our county to serve a three-year term on the Committee for Health Care Financing was received. Dr. Thornton W. Merriam, Jr. was again elected to represent this county on that committee for another three-year term.

Dr. Clough announced that the Home Health Care Organization requests to meet with the Executive Council of the County Society, presumably to present their program to our organization.

There was no old business.

Under new business, the communication from Dr. Fichtner was again taken up and presented to the membership. Dr. Fichtner specifically requested that the membership of the County Society be polled with regard to their feeling toward working for repeal of the Bennett Amendment. Substantial discussion then followed with regard to the advisability of taking such a poll and how this might effect the previous position taken by the Maine Medical Association at its House of Delegates meeting at the annual convention in June 1973. Dr. George W. Wood, III explained the present state of affairs of PSRO and its relationship to the Maine Medical Association and its official position taken at the June 1973 convention. Dr. Wood moved that we refrain from the polling of the membership on this matter and instead instructed delegates from this county to the House of Delegates to once again discuss the matter in their next House of Delegates meeting where, hopefully, a more objective, valid, and unemotional consensus could be attained. This motion was seconded, and unanimously passed by the membership.

A discussion concerning legislative document 2199, an Act to Delegation of Selected Services by Professional Nurses then ensued. In essence, this act would allow non-professional personnel to perform services previously performed only by trained and licensed professional nurses. A specific point in question was the dispensing of medication by non-professional personnel in hospitals and nursing homes. Since no one at the meeting had read the actual legislative document and all information was either through the news media or was hearsay information, Dr. Charles

D. McEvoy, Jr. moved that the Executive Council of the Society review LD 2199, properly discuss it in Executive Council Session and decide accordingly for the membership as to the position that we should take regarding this legislation. It was additionally stipulated, following the discussion of this matter, the decision of the Executive Council should be transmitted to Dr. Daniel Hanley, Executive Director, Maine Medical Association with copies to Dr. Brinton T. Darlington, Chairman, Legislative Committee, and Charles Cragin, lobbyist for the Maine Medical Association.

The scientific portion of the meeting entailed a discussion and presentation on Clinical Engineering by Dr. W. Page Clason. Dr. Clason described the recently formed and funded consulting engineering program with which he has been involved. A consulting program in Medical Engineering throughout the states of Maine, New Hampshire and Vermont in cooperation with the Universities of Maine, New Hampshire, and Vermont has been formulated. At the present time, Dr. Clason and his group stand ready to travel to areas within the State to aid and advise on technical functions of medical and paramedical equipment and have devised a mechanism whereby mechanical difficulties may be rendered operable through appropriate personnel. It is hoped that this program will become self-supporting within two to three years of operation. Following Dr. Clason's presentation, a question and answer session followed.

Following the scientific presentation, and as there was no further business, the meeting was adjourned.

PHILIP G. HUNTER, M.D., *Secretary*

LINCOLN-SAGADAHOC

A regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held on January 15, 1974 at The Ledges in Wiscasset, Maine.

The meeting was called to order by the President, Dr. Peter A. Evans at 8:55 p.m. The minutes of the December meeting were read and accepted as read.

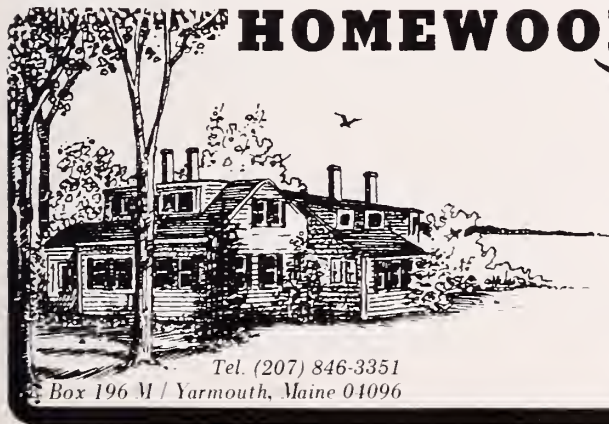
Old Business: None.

Correspondence: A letter from Dr. Paul A. Fichtner was read asking for a poll of this Society as to feelings relating to working for repeal of the (PSRO) Bennett Amendment. After discussion, a vote of twenty for repeal of the Bennett Amendment and two against was counted.

Dr. David W. Schall then moved that the secretary of this Society address letters directly to our congressmen expressing our desire for repeal of this bad law. This was seconded by Dr. Robert M. Hassan and passed unanimously.

Committee Reports: Dr. Fichtner outlined impending legislation, in Augusta, of significance to the medical profession. Dr. George W. Bostwick expanded on the proposed changes in the Nursing Practice Act.

The Board of Censors proposed three physicians for election to active membership. (1) Dr. Peter W. Bowman, 56 Baribeau



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Drive, Brunswick, Maine. A letter of transfer from the Cumberland County Medical Society was presented. (2) Dr. Frederick V. Stong, Parkview Professional Building, Brunswick, Maine. (3) Dr. Philip S. Crichton, Regional Memorial Hospital, Brunswick, Maine. Approval by the Society was unanimous.

The Nominating Committee proposed the following slate of officers:

President: Dr. Peter A. Evans, Brunswick

Vice-President: Dr. Ralph C. Powell, Damariscotta

Secretary-Treasurer: Dr. George W. Bostwick, Newcastle

Delegates to the M.M.A. House of Delegates: Drs. Elihu York, Brunswick and Anthony J. Horstman, Boothbay Harbor. Alternates: Drs. Frank O. Avantaggio, Jr., Damariscotta and Gilbert R. Rowan, Bath

Censors: Drs. Samuel L. Belknap, Damariscotta, John F. Dougherty, Bath and Carl R. Griffin, Jr., Boothbay Harbor

Program: Drs. Louis Bachrach and Robert S. Galen, both of Brunswick

Diabetes Detection: Dr. David W. Schall, Brunswick

Dr. John F. Andrews moved that the nominations be closed. The motion was seconded by many, passed unanimously; and the secretary was instructed to cast one vote for the slate.

Dr. Bachrach then introduced the program on comprehensive health planning in the physician's office and the area, presented by Dr. Elihu York and Mr. Tad Runge.

GEORGE W. BOSTWICK, M.D., *Secretary*

WASHINGTON

A combined meeting of the Washington and Hancock County Medical Societies was held at the Red Barn Restaurant, Milbridge, Maine on January 23, 1974 with eighteen members present.

The meeting was chaired by Dr. G. Bernard Shaw, Machias, President of the Washington County Medical Society. Dr. Shaw introduced Dr. Randall H. Silver, Ellsworth, who spoke on the Pediatrics Medical Screening Program, and as of Jan. 1, 1974 has a contract with the State Medical Health Program to perform screening on 0-21 yr.-old Medicaid recipients in Hancock and Washington Counties. Bary Kynreich, Ellsworth, will be the Administrator of this program. Brenda Minnihan of Cutler, a pediatric nurse practitioner will assist doing the screening, which will probably take part in Machias, Milbridge and Lubec. Dr. Silver said that he hoped to have the help of the physicians in the above-named areas, and he also hoped to make use of the physicians in the Eastport and Calais areas.

Dr. Donald Robertson, Milbridge, spoke about progress of the Down East Clinical Associates of the Machias, Lubec area. The group practice plans to work in association with the Down East Health Association of Lubec. This will be an HMO type of plan with enrolled AFDC recipients.

KARL V. LARSON, M.D., *Secretary*

KENNEBEC

The Kennebec County Medical Association met on Thursday, January 17, 1974 at the Holiday Inn in Augusta, Maine jointly with the Kennebec County Bar Association. Following a social hour and dinner, the business meeting of the Kennebec County Medical Association was conducted by the President, Dr. William E. Schumacher.

The reading of the minutes of the previous meeting was dispensed with. The secretary then read two communications. The first was a letter notifying the membership of the Interim Meeting of the Maine Medical Association House of Delegates which will be held on April 6th. The second was a letter from Maine Medical Association President, Dr. Paul A. Fichtner, requesting a polling of membership regarding the A.M.A.'s working for repeal of the Bennett amendment. Dr. Richard T. Chamberlin explained the implications of the vote on this question and a subsequent vote indicated the great majority of membership present was in favor of working for repeal of the Bennett amendment. Two of the members present voted against the motion. There were no committee reports and no old or new business.

The Kennebec County Bar Association then had its business meeting conducted by President, Lester Jolovitz. Following this, the program was conducted by Dr. Schumacher. Two problems of interest to both professions were discussed. The first subject was the Industrial Accident Commission hearings which have provoked considerable discussion. The main substance of the discussion revolved around the necessity for good reports from the physicians, a better working knowledge of the Industrial Accident Commission law by the physicians. It was recognized that the scheduling of the hearings was a vexing problem which probably could not be solved to everybody's satisfaction. A suggestion was made that seminars be conducted for the mutual benefit of the lawyers and physicians on problems related to this main topic. The Kennebec County Medical Association will appoint a committee to set up a program in conjunction with the members of the Kennebec Bar Association.

William Niehoff, Esq. reported on the joint medical-legal plan for pre-trial consideration of malpractice cases. He noted that a joint medical-legal committee had been working on this same subject for the past few years at the State level, and he suggested that the Kennebec County Medical Association get in touch with the Maine Medical Association to determine the present status of the Statewide effort. Dr. John W. Towne favored the development of a program at the county level which could then be presented to the State association as a model for wider implementation of the plan.

The discussion was generally informative and a convivial and beneficial evening was enjoyed by the members of both groups. The meeting adjourned at 9:40.

KEVIN HILL, M.D., *Secretary*

Annual Meeting Dates For Your 1974 Calendar . . .

Maine Medical Association, June 15-18
Shawmut Inn, Kennebunkport, Maine

American Medical Association, June 23-27
Chicago

Letters to the Editor

To the Editor:

As promised in January, enclosed is a list of the summer programs to be held at Colby in 1974. The medical programs have a little star at the left. As you can see, we have eleven programs this summer. The Lancaster course in Ophthalmology is listed as the 29th annual; it is the 21st annual at Colby, the other eight being held elsewhere. Dr. Henry Allen of Boston is the program director.

The Topics in Hematology program is the first annual. Indeed, where we do not list a number, the program is new for 1974. The hematology one, by the way, has co-sponsorship between the American College of Physicians and the American Society of Hematology, along with Colby and Thayer Hospital. This is the first time, as I understand it, that the American College of Physicians has been willing to have its name used as a co-sponsor for a program outside of a major medical institution or a society.

I might point out that Colby College is the only college in the State of Maine accredited to provide category one credit for the annual physician's recognition award of the American Medical Association. Indeed, Colby is the only college, not only in Maine, but in the country, so accredited. If one checks the institutions that are accredited by the AMA's Council on Medical Education, you will find that there are many hospitals, universities, medical schools, and various organizations but Colby College is the only college listed among all the accredited institutions.

The Cancer Treatment course will be directed by Dr. Robert Golbey, of the Memorial Hospital for Cancer and Allied Diseases in New York. This, too, is a new one. The Surgical Techniques is headed by Dr. John Reynolds, of our own Thayer Hospital in Waterville.

The Fifth Neurosurgical Techniques program is headed by Dr. William Beecher Scoville of Hartford, Connecticut, and is one of our best programs. We have an international faculty for it.

The Frederick T. Hill Seminar is directed by Dr. Loring Pratt of Thayer, right here in Waterville.

The Industrial Hearing Testing and Occupational Hearing Loss Institutes are both directed by Dr. Joseph Sataloff of Philadelphia. As you can see, we have had Occupational Hearing Loss for a long time; indeed, a lot longer than the current battle over noise pollution.

The Nuclear Medicine program is directed by Dr. Henry Wagner of Johns Hopkins, and is a very well received program. The last two mentioned, Forensic Medicine and Pulmonary Disease, are both new ones. The American Thoracic Society has endorsed and is supporting the Pulmonary Disease program, and so is the Maine Lung Association. The Forensic Medicine program is still somewhat tentative but expectations are that Mike Baden, Chief Medical Examiner of New York City, will be the headliner for that one. The local co-directors are Dr. Anthony Betts and Dr. Irving Goodof.

Costs for these programs differ, as you can imagine. Any inquiries can be directed to me at Colby.

I mentioned to Dr. Beaupre your question about having one issue of your publication be a Colby issue. He was flattered, as I was, but he cautioned that much of the daily classroom work is not in paper form. However, he does believe there will be some papers delivered this year and he will keep alert to some potentially excellent papers to bring to your attention.

Thank you so much for all your help, and I certainly hope we meet soon. I will send you brochures of the medical programs when they are available.

SUMMER PROGRAMS AT COLBY COLLEGE, 1974

June 15-August 23

*29th Annual Lancaster Course in Ophthalmology

June 18-21

Maine Methodist Conference

June 22

Annual Meeting, Maine Historical Society

July 9-13

*Topics in Clinical Hematology

July 14-18

*Cancer Treatment Seminar

July 15-16

21st Annual Estate Planning and Tax Institute

July 23-26

*4th Annual Seminar in Surgical Techniques

July 27-28

4th Annual Show, Water-Oak Gem and Mineral Society

July 28-31

*5th Annual Seminar in Neurosurgical Techniques

August 4-7

*15th Annual Frederick T. Hill Seminar in Otolaryngology

August 4-8

*11th Annual Industrial Hearing Testing Institute

August 4-10

*22nd Annual Institute in Occupational Hearing Loss

August 11-17

19th Annual Great Books Institute

August 18-24

19th Annual Church Music Institute

August 19-23

*6th Annual Seminar in Nuclear Medicine

August 25-28

*Seminar in Forensic Medicine

August 25-29

*Seminar in Pulmonary Disease

R. H. KANY

Director of Summer and Special Programs

Colby College

Waterville, Maine 04901

To the Editor:

As you may know, one of the five Outward Bound Schools in the United States is located off the coast of Maine on Hurricane Island. This school educates people between the ages of 16 and 62 in techniques of sailing, navigation and rock climbing and teaches them about the environment and how to "live off of the land." The staff of the school, under the direction of Mr. Peter Willauer, provides an interesting cross section of personalities and educators from various parts of the United States and Great Britain each of whom teaches his or her specialty to the students.

For several years now, physicians (largely from the Maine Medical Center) have provided medical coverage for the school. Since there has been a great deal of interest in the last two years on the part of other physicians in and around Maine, we would like to offer the opportunity of visiting the school to any and all physicians.

The doctor and his family may spend anywhere from two days to two weeks on the picturesque, rockbound island. Room (floored tents, cots) and board (generous meals in ski-lodge type dining hall) are provided; the medical facility is a two bed overnight area with a diagnostic/treatment room. Generally sick call is taken twice a day and takes a minimal amount of time. The remainder of the time is left up to the individual and his family — sailing, climbing, listening to lectures or just strolling the beaches searching for rose hips and breathing the salty air.

The school runs from May to October. A brochure which further describes the program is available on request. Any physician who would like to spend some time at the Hurricane Island Outward Bound School or wishes more information should contact me.

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To the Editor:

WEINBERGER CONDEMNS MEDICARE AND MEDICAID PATIENTS
TO SECOND-CLASS MEDICINE

Private Practice, the journal of socioeconomic medicine published by the Congress of County Medical Societies, announced its total opposition to the recently announced drug plans of the Department of Health, Education and Welfare. As outlined by Secretary Caspar W. Weinberger, HEW would limit reimbursements for prescription drugs provided under Medicare and Medicaid to "the lowest cost at which the drug is generally available." This would usually be the so-called generic drug rather than a brand-name pharmaceutical.

Testifying on December 19th before Senator Edward Kennedy's Senate Health Subcommittee, Mr. Weinberger claimed that this would save taxpayers \$25 to \$60 million between now and the fiscal year ending June 30th.

"We deplore this kind of cheap-drug policy," said Publisher Francis A. Davis, M.D. "It condemns Medicare and Medicaid patients to second-class medical care. The whole notion is based on the mistaken idea that chemical equivalency equals therapeutic equivalency. There are many reasons why this is not so. This kind of short-sighted policy, while it *may* save some money in the short run, will do so only at a very high cost to the health of American people."

Writing in *Private Practice*, William H. Havener, M.D., of Columbus, Ohio, has noted that:

"The concept of generic prescribing may be defined as the belief that identification of a drug by its chemical name is accurate and sufficient for medical purposed.

"Generic prescribing is of current legislative interest because of the belief that great economy is possible through the purchase of an accurately named chemical (a generic equivalent) instead of a brand-name medication.

"Certainly all sensible taxpayers want economy in government, including money spent on health care.

"However . . . the medical profession opposes legislation directing that the least expensive generic equivalent shall be substituted in the filling of a medical prescription.

"How can this apparently inconsistent position be justified?

"The basic fact is that generic equivalence is a myth.

"I will cite an illustration of this myth which will be familiar to everyone then we will discuss the problem from a medical standpoint.

"First, let us specify a substance by the accurate generic name "carbon." What do we mean? It could be a polished diamond or a chunk of coal. They are generic equivalents, but they are certainly not the same.

"Since I am an ophthalmologist, I shall use eye drops to illustrate why the concept of generic equivalence is a myth. Let us assume that the name and concentration of a chemical have been designated. Are all eye drops the same if they contain this amount of the chemical?

"Let me outline a few other things that matter before you put this eyedrop in your eye:

"A) pH (acidity or alkalinity)

"1) Determines degree of dissociation of alkaloids and therefore their availability to penetrate the eye.

"2) Related to stability, i.e., how long till it deteriorates and is unusable.

"3) Important factor in comfort — whether the drops hurt.

"B) Sterility

"Use of unsterile generic equivalent during eye surgery could destroy eye through infection.

"C) Preservatives

"A variety of chemicals in various concentrations may be added to help retard growth of bacteria. Preservatives may have toxic effects to the eye, improve or hinder absorption of the drug, and are of variable effectiveness. Many incompatibilities exist, in which the preservative may inactivate the medication.

"D) Particle size (of suspension)

"Larger particles offer less available drug, sediment out of suspension, and may be mechanically irritating.

"E) Choice of salt

"The active drug may be combined with a variety of ions, i.g., pilocarpine hydrochloride, nitrate, or salicylate. Each has different incompatibilities and solubilities.

"F) Antioxidants and stabilizers

"Addition of appropriate substances will greatly extend the expiration date of unstable compounds. Conversely, their absence permits rapid deterioration.

"G) Viscosity

"A viscous vehicle will greatly prolong contact of the eye-drop with the eye. Some types dry to a protective film on the eyelids and are unusually effective in treatment of lid infections. Other vehicles may be greasy and can be cosmetically or functionally objectionable.

"H) Solubility relationships

"A medication form which is more soluble in the vehicle than in the corneal surface will stay in the vehicle and will not be optionally absorbed by the eye.

"I) Wetting agents

"Detergent-like additives can greatly enhance drug penetration.

"J) Combinations

"Mixtures of active drugs may give an improved effect or have advantages of convenience or economy. They also increase the chance of allergy or other toxicity.

"K) Drug form

"Choice of suspension or solution may have advantages of stability or penetration of the medication.

"L) Tonicity

"Hypertonic or hypotonic solutions may irritate or even destroy the delicate cells of the eye. I have seen blindness result from irrigation of the interior of the eye with solutions of improper salt concentration.

"M) Packaging

"Various containers have advantages of ease of use, breakage resistance, spill-proofing, chemical inertness, size economy, protection from light, etc.

"Medications other than eye drops also have different vehicles:

"A) Taste, smell, color, consistency are important in determining the acceptability of the medication to the patient. Will the child (or adult) take his medicine?

"B) Purity may vary greatly. U.S.P. requirements specify 85 percent purity for penicillin. Many reputable manufacturers achieve 98 percent purity. "Penicillin" allergy is often due to impurities.

"C) Coating of capsules may protect medication against destruction by stomach acids. Prolonged medication effect is achieved by mixtures of granules with coating which will dissolve at various rates. Faulty coatings may not dissolve at all, permitting the pill to pass through the body with no medical effect at all.

"D) Absorption of medication from pills depends on how rapidly they dissolve, the choice of salt used, the stability of the drug in digestive juices, whether it becomes absorbed upon food residues, and a variety of other such factors. As a well recognized example, Chloromycetin (Parke-Davis brand name) is a very effective antibiotic, whereas all other generic equivalents of chloramphenicol (generic name) fail to achieve comparable blood levels of the antibiotic.

"E) Deterioration to ineffective or toxic substances may occur. Tetracycline (an antibiotic) dispensed in relatively acid capsules will slowly transform into a deadly kidney poison. Without appropriate (and costly) safeguards, problems do occur.

"Because the medical effort of a given chemical is so greatly dependent upon the form in which it is dispensed, the concept of "generic equivalence" is truly an imaginary oversimplification.

"There exists hardly anything that some unscrupulous man cannot make a little more poorly and sell a little cheaper."

"Long after the joy of low price passes, the bitterness of low quality remains."

"It is understandable, but tragic," concluded Dr. Davis, "that Secretary Weinberger has chosen to believe that the cheapest drug product on the market would perform as well as the most expensive one. He has applied a concept to the health of Medicare and Medicaid patients that he would rightly hesitate to use with meat, Scotch, or golf balls."

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Methaqualone Coma

PAUL C. DAIUTE* and JOSEPH F. MARTINAK, M.D.**

INTRODUCTION

Methaqualone as a drug of abuse appears to be on the rise. Inevitably, life endangering overdoses are seen subsequent to the use of any drug with potential for abuse. Not much information has been reported in the literature regarding overdoses with methaqualone. Indeed, its quantitation in serum samples has proven to be difficult.

It is the purpose of this paper to report certain physical findings which may be peculiar to a comatose patient proven qualitatively to have ingested methaqualone. In addition, a treatment is outlined which in retrospect, was successful, even though there was a delay of two days before the specific ingested drug was determined.

CASE HISTORY

A 44-year-old male patient was brought to the Emergency Department in coma. No history was available.

Examination revealed a well nourished male, not cyanotic, pulse 104/pm and regular; respiration 16/pm; blood pressure 110/60; pupils were slightly constricted but equal, 1 mm size and reactive to light. Deep tendon reflexes were hyperactive bilaterally. Corneal reflex was present, but cremasteric and abdominal reflexes appeared absent; no reaction to pain; muscle tone was good. Superficial lacerations were seen in the left antecubital fossa and left volar wrist. Remainder of the physical examination was noncontributory. A suicide attempt by drug ingestion and self-inflicted wounds was suspected, and treatment instituted. Lab data and course of treatment follows.

LAB DATA

11/15 (admission)	Weight 170 lbs.	Arterial Blood Gases
		PCO ₂ 31
Hgb 13.7		PO ₂ 51
Hct 41.1		pH 7.43
WBC 12,200 with 19 bands		Na+ 143
		K 4.5
Blood Sugar 168 (IV running)		Cl 103
Urine — Negative		CO ₂ 23

*MEDEX.

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A cuffed endotracheal tube was inserted, cuff inflated. An N-G tube passed, lavage carried out. IV and urine catheters inserted. Urine, blood, and gastric samples were sent for drug analysis. In addition to IV fluids, Narcan® 0.4 mg IV and Lasix® 40 mg IV were given. Bicarb 44 M Eq. was added to the IV. Nebulized compressed air was used as the respiratory gas. The patient did not respond to the Narcan medication.

The patient was treated by forced diuresis with serial blood gases, urine output, blood pressure and neurologic status observations used as a guide. The blood gases, with the patient breathing compressed air remained within normal limits. Reports on the samples sent for drug analysis did not arrive until two days after the patient was admitted and were as follows:

Barbiturates	..... Negative	Diazepam	..... Negative
Morphine	..... Negative	Salicylate	..... Negative
Alcohol	..... Negative	Methaqualone	..... Positive

After the patient awakened, it was established that he had taken 8 tablets of methaqualone each containing 300 mg. about 5 hours before being brought to the Emergency Room. There were no apparent abnormalities demonstrated throughout the remainder of the hospital stay.

DISCUSSION

As was seen in this case, the patient presented in coma. From the observations made of the patient and after ruling out other causes of coma, a drug ingestion was the primary diagnosis. The initial observation of constricted pupils with mild respiratory depression suggested the possibility of narcotic overdose. There were, however, no apparent injection sites and color and vital signs were stable. Neurologic examination revealed hyperactive, bilateral deep tendon reflexes, good muscle tone and a present corneal reflex. These neurologic signs, together with no marked compromise in the cardiovascular and respiratory systems might comprise findings peculiar to methaqualone toxicity. Through judicious use of fluid and diuretics, in addition to alkalizing the urine, the drug apparently cleared through the kidney. Oxygenation using compressed, humidified air was certainly adequate in this case — compressed air being the preferred gas in the majority of drug overdoses, as its concentration of O₂

SIGNIFICANT SEQUENTIAL OBSERVATIONS

Date	Time	Level Consciousness	Pupil Size & Reaction	Response	B.P.	Urine Output	Deep Tendon Reflexes
11/15	7 pm (Admission)	Comatose	=, 1mm, React	None to Stimuli	110/60	—	++
11/15	11 pm	Comatose	=, 1mm, React	None	118/72	100cc/hr	++
11/16	4 am	Comatose	=, 1mm, React	None	130/70	60cc/hr	++
11/16	10 pm	Comatose	=, 1mm, React	Responds to painful stim.	140/70	200cc/hr	++
11/16	4 am	Comatose	=, 1mm, React	Responds to painful stim.	133/80	200cc/hr	++
11/17	2 pm	Awake	—	—	130/80	—	++

and CO₂ do not inhibit respiratory drives and mask the patient's response to treatment. Blood gases are of course advisable to monitor respiratory treatment. There were no convulsive episodes with this patient.

According to the literature, Gujral introduced the methaqualone in the 1950's in India. It has the following properties: 1) hypnotic effects comparable to those of barbiturates, 2) anticonvulsant effects against experimentally induced seizures, 3) anti-tussive effects comparable to those of codeine and 4) weak antihistaminic effects. The drug has no analgesic effects but does enhance the analgesia produced by codeine.

Although initially thought to be relatively free of side effects, current reports indicate that hangover, dizziness, urticaria, and paresthesias can occur when the drug is used.¹

Patients who had ingested a large overdose of methaqualone exhibited a response to auditory and painful tactile stimuli. Pathological reflexes were not observed, but the normal reflexes might be diminished in the presence of a marked increase of muscle spasticity. The pupils were round and equal, and alternate back and forth from dilation to constriction. The pupillary reaction to light was maintained, as were the corneal and cough reflexes. One does not see the marked depression observed following the ingestion of an overdose of a barbiturate or glutethimide.

However, in very high blood concentrations of methaqualone or if this drug is taken in conjunction with alcohol, I suspect marked depression of the cardiorespiratory system, as well as sensorium would be observed.

Again, according to the literature, the blood concentration of methaqualone is remarkably low considering the amount of the drug and its metabolites excreted in the urine. Methaqualone, following absorption from the gastrointestinal tract, is taken up by adipose tissue, from which it is released over several days, metabolized in the liver and rapidly excreted through the kidney. The average time required for excretion of a large overdose of methaqualone and its metabolites is 6 to 7 days. Excretion is enhanced by adequate urinary output.²

The acute ingestion of an overdose of methaqua-

lone produces a definite increase in salivary and bronchial secretions which have to be aspirated frequently in spite of an active cough reflex.

In contrast to the marked motor depression produced by the barbiturates and glutethimide, a large overdose of methaqualone produces increased motor tone, the degree of hyperactivity being dependent on the amount of drug absorbed. Even though the patient may be in deep coma, one first observes a definite increase in motor activity which, in patients who have ingested a large overdose, progresses to tonic convulsions which may occur spontaneously or be initiated by very slight external stimuli. This increased motor activity may last 4 to 5 days and if not controlled, may lead to exhaustion accompanied by cardiovascular collapse. It has been reported that diazepam (Valium®) administered slowly by intravenous route (to prevent respiratory depression) is effective for control of the motor hyperactivity. Only very large doses produce this syndrome. Analeptics are contraindicated. In the presence of motor hyperactivity, the EEG shows a characteristic convulsive pattern.²

In the presence of inadequate urinary output, hemodialysis may be helpful in removing methaqualone from the blood. Hemodialysis is 4 to 5 times more effective than peritoneal dialysis. Soybean oil is preferable to an aqueous dialysate.

In reference to the abuse of methaqualone, its addictive properties appear to be qualitatively equivalent to that of the short-acting barbiturates.³ The abstinence syndrome associated with this drug are manifested by headache, anaraxia, nausea, abdominal cramps and disturbed sleep patterns.³ Occasionally, convulsions are seen during withdrawal.

SUMMARY

A case of coma secondary to methaqualone overdose is presented. Pertinent physical findings which may be peculiar to this drug, are discussed, as is a treatment regimen.

Methaqualone = Quaalude®

REFERENCES

1. Goodman L. S., Gillman A.: Clinical Pharmacology and Therapeutics. New York, Macmillan Co. 1970, p. 131.
2. Rorer: Quaalude (methaqualone) overdosage information.
3. INABA et al: Methaqualone Abuse. JAMA 224: 1508, June 11, 1973.

Hospitals Continue to Grow Despite Federal Cutbacks*

RICHARD I. ROBERTS**

With the increasing trend toward federal cutbacks in hospital expansion programs, alternative methods of financial assistance have proven both necessary and successful. One of these methods is long term financing through the issuance of Tax Free Revenue bonds. This method of financing allows the hospital to provide its medical services in a traditional, private, non-profit manner without any further taxes levied on the community.

Tax exempt financing is possible using two different methods. The first approach can be done according to Internal Revenue Service Ruling No. 63/20. Under the mechanics of this route, a hospital issues its own bonds, subject to a tax exempt ruling by the Internal Revenue Service and subject to a municipality accepting ownership of the hospital at the end of the financing period usually 35-40 years.

The second approach to financing hospital expansion with tax exempt bonds is through state or local "Authorities." Under this mechanism, the Authority issues the bonds, simultaneously taking ownership of the hospital and leasing the facility back to the non-profit hospital corporation. The lease payments provide for debt service to fully amortize the financing over the life of the bond issue. At the end of the financing period, title to the hospital reverts to the non-profit hospital corporation.

The first revenue bonds were issued by the city of Spokane for sewer and water construction. The interest on the bonds was later paid by revenue received from the taxes on usage of the municipality's sewer and water works. During the late 30's and early 40's, revenue bonds were issued in considerable numbers. Many Authorities were formed to utilize the revenue bond concept to assist communities in their housing expansion programs from 1937 through 1941. Bridge and tunnel authorities were formed for their expansion programs.

This concept has also been used for industrial development. Here, the municipality issues "industrial development" bonds whose purpose is to stimulate industrial development within the community. However, some criticism has been directed against industrial corporations whose activities were not "essentially public in nature," thereby

causing some question in regard to their tax-exempt status. This argument has not been applied to hospitals, whose activities are unquestionably "public in nature."

One interesting criticism of hospital tax free bonds was highlighted by a recent court case in Columbus, Ohio. The plaintiff argued that public financing (through the issuance of tax free bonds) of church operated hospitals violated the church-state provision of the Ohio Constitution and the first and fourteenth amendments of the U.S. Constitution.

The Appeals Court, however, ruled that Franklin County (Columbus, Ohio) commissioners have the right to authorize the issuance of bonds for the construction and equipping of hospital facilities, including hospitals under the directorship of the Catholic and Methodist Church. In its decision, the Appeals Court noted that all eight general hospitals were non-profit corporations of Ohio open to the public on a non-discriminatory basis. The court stated, "Ohio has long recognized hospitals and the treatment and care of those who are ill as vitally interwoven with public interest." "That interest, in our opinion, transcends the interrelated question of who operates the particular institution." Until recently there existed relatively few financial vehicles available to non-profit hospitals. Many banks and insurance firms will assist hospitals through mortgage loans, but, these loans do not cover the entire cost of the project. They also mature in a relatively shorter time period than tax-free bonds and the interest is dependent on current market rates.

Another solution to the problem of combatting federal cutbacks is through the issuance of tax-free revenue bonds. Tax exempt financing can be completed through two methods. In the first method of financing, a non-profit hospital corporation issues its own bonds subject to a municipality accepting ownership of the hospital at the end of the financing period. The theory behind this method of finance is based on Section 103 of the Internal Revenue Code of 1954 and I.R.S. ruling Number 63-20.

The specific requirements are:

1. The corporation must engage in activities which are essentially public in nature.
2. The corporation must be one which is not organized for profit (except to the extent of retiring indebtedness).
3. The corporate profit must not inure to any private person.
4. The state or a political subdivision thereof

*This paper is a part of an independent project on the delivery of health care in the United States.

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must have a beneficial interest in the corporation while the indebtedness remains outstanding, and it must obtain full legal title to the property of the corporation with respect to which the indebtedness was incurred upon retirement of such indebtedness.

5. The corporation must have been approved by the state or a political subdivision thereof, either of which must also have approved the specific obligations issued by the corporation.

The other method of financing hospitals with tax-exempt bonds is through state or local "Authorities." The one limiting factor is that not all states have passed legislation providing for Authority tax-exempt hospital financing. Under this mechanism, the Authority issues the bonds, simultaneously taking ownership of the hospital and leasing the facility back to the non-profit hospital corporation. The lease payments provide debt service to fully amortize the financing over the life of the bond issue. At the end of the financing period, title to the hospital reverts to the non-profit hospital corporation.

The Bonds are tax-exempt because a political subdivision will receive the hospital facilities as a gift when the bonds are fully paid. This tax exempt status not only permits the hospital or local authorities to issue its securities at a lower interest rate, but also allows the hospital or local authorities to double the life of the loan. Ordinarily taxable bonds generally have a 20 year maturity period; while tax-free revenue bonds may have maturities as long as 35-40 years. "Sinking Fund Issues" are also very common when issuing tax-free revenue bonds. A sinking fund bond is not a distinct type of bond, but rather is a provision within the indenture of the bond issue. The sinking fund reduces outstanding debt requiring the hospital to set aside a specific sum of money at periodic intervals for repurchase of the bonds. This fund eventually provides the hospital with the opportunity of retiring a certain percentage of the bonds prior to maturity. The advantage of a sinking fund issue as opposed to a serial issue (common among taxable bonds) is the longer maturity period and the fact that no fixed amount is due each

year. This provides the hospital with a longer period of time to make up earlier deficiencies in sinking fund payments.


In general, underwriters are only concerned with hospital expansion programs, as opposed to underwriting a newly formed hospital. These firms first evaluate the financial record of the hospital for a 10-20 year period. The underwriters also examine the hospital property value and generally place 40-50% maximum borrowing limit on this "value."

Most underwriters will agree that the hospital should be worth two or more times the value of the bond offering, and annual payments for interest and principal should not total more than 55 percent of anticipated net income. The average net income for the last three years should be at least 1½ times the annual interest and principal payment before deducting depreciation and debt charges.

With increasing federal cutbacks of hospital expansion programs and the increasing failure of hospital fund raising campaigns, tax-exempt financing may prove to be the only successful alternative. Hospital personnel can venture into the community not seeking donations, but rather seeking investment money through the issuance of tax-free hospital bonds.

In general, tax-exempt bonds have lower interest rates than do U.S. Treasury or corporate bonds. Were this not true, there would be an even greater difference in effective rate of return to the investor between a taxable and non-taxable bond than now exists.

The interest on a corporate bond is included in an individual's taxable income. Therefore, a "lender" will be willing to accept a lower rate of interest if he does not have to pay taxes on the interest he receives. In turn, hospital underwriters can communicate the idea that a middle income family no longer has to support hospital expansion programs through charitable donations. This same family now has the opportunity to "contribute" to the growth of the community by investing in tax-free revenue bonds.



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Developmental Disabilities*

A Perimeter of Public Law 91-517, 1970 and Proposals for Integrated Services

PETER W. BOWMAN, M.D. and JOHN L. HOFFMAN, Ph.D.

I. THE PERIMETER

Public Law 91-517, with Short Title "Developmental Disabilities Services and Facilities Construction Amendments of 1970" is formally identified as:

"An Act to amend the Mental Retardation Facilities and Community Mental Health Centers Construction Act of 1963 to assist the States in developing a plan for the provision of comprehensive services to persons affected by mental retardation and other developmental disabilities originating in childhood, to assist the States in the provision of such services in accordance with such plan, to assist in the construction of facilities to provide the services needed to carry out such plan, and for other purposes."

The term "developmental disabilities" in itself is so broadly flexible as to be diffuse and ambiguous. Although the law by definition and by implication appears to say what a developmental disability is *not*, the law does not fully and satisfactorily state in a positive way what a developmental disability is. The law does, however, seem to provide certain guidelines for such a statement, and examination of these perimeters determines the logical area *within* which more specific definitions of developmental disabilities can be made.

These guidelines begin with the statement that "the term developmental disability means a disability attributable to mental retardation," and "(to) cerebral palsy, epilepsy, or another *neurological* condition found by the Secretary (of Health, Education, and Welfare) to be closely related to mental retardation or to require treatment similar to that for mentally retarded individuals."

A purely neurological factor is indicated on the one hand. However, this retardation is clearly not defined to include *only* neurologically related retardation and conditions. To those who are even slightly familiar with this field, it is impossible to dismiss from retardation one of its major etiological components — the psychosocial. Supportingly, the law states that relevant State problems shall include not only social services, but, more significantly, "comprehensive health and *mental health*

plans," and have as primary goals "social and personal habilitation or rehabilitation."

In addition to its neurological and psychosocial components, retardation is related to a dimension of purely physical incapacity. This type of developmental disability also received recognition in the law's statement that State programs are to include crippled children's services, and that *physical* habilitation or rehabilitation is one of the major program goals.

More generally, the law says that a developmental disability is one that originates before the individual attains age 18, and one which has continued, or can be expected to continue, indefinitely. The general definitions are further widened with the statement that the disability is one that "constitutes a considerable handicap" to the individual and requires, as noted before, "treatment similar to that for mentally retarded individuals."

The individual, then, with a developmental disability is one whose disability may have neurological, physical, or psychosocial etiology, and he is one whose developmental needs go well beyond the ranges of social, educational, personal, and physical experiences that society and family normally provide for the enculturation and development of the "normal" child.

These are the perimeters given by the law. We are further encouraged in the task of more specific definitions by the law's directing the individual State Plan to "provide for the furnishing of services and facilities for persons with developmental disabilities associated with mental retardation, *specify other categories of developmental disabilities* (approved by the Secretary), which will be included in the State Plan, and describe the quality, extent, and scope of such services as will be provided to eligible persons."

II. REFLECTIONS ON INTEGRATED SERVICES

A program development aimed at identifying, diagnosing, treating and otherwise providing for conditions that have as a common denominator, a disability, or, disabilities interfering with or preventing normal childhood development is a complex task.

Programs for some disabilities are well estab-

*Reflections upon the Developmental Disabilities Bill of 1970.

lished in some areas and totally lacking in others. Some provide only diagnostic services, others provide treatment as well. Some are funded by foundations or donations, others by Federal Grants. Still others are provided by regular appropriations from State funds. Some disabilities have received little or no effective support from anywhere. This has resulted in serious inequities, jurisdictional confusion, competition, and, of course, duplication.

We have long advocated regionalization of health services. We also have, for more than a decade, proposed integration of health and supportive services rather than costly segregation.

With this background, we feel that a basic requirement to proceed with our thesis is the need for a definition of "Developmental Disabilities."

We suggest that there are four fairly distinct groups:

A. Perhaps we can agree that there is the group of developmental disabilities that have *primarily physical manifestations* and etiologies. They may be systemic or single-organic, genetic or acquired. After diagnostic work-up, a single or multiple professional involvement may be required. The result of such *initial* intervention may solve the problem at hand entirely or conceivably arrest a progressive process. In other instances, continued habilitative and rehabilitative work may have to be instituted with varying degrees of success. The first phase may require a sophisticated professional team in which the pediatrician, the surgeon, the ophthalmologist, the orthopedic surgeon, a psychiatrist, a neurosurgeon, a plastic surgeon, or a combination of several may well provide a primary rehabilitative effort. This will be supplemented by nursing care, physical and/or occupational therapy, speech therapy, psychological and specialized educational services, and, in some instances, by psychiatric services. Most likely, a social worker will effect liaison between the team, the patient and his community (relatives, school, etc.). Whatever the effort, our patient could be pronounced "cured." He may require (a) chronic rehabilitative services in excess of three months, (b) "Permanent" rehabilitation and care for a number of years, or (c) become a candidate, sooner or later, for a work activities center and supervised group living, or an employee in a sheltered workshop. Some may become residents in boarding or nursing homes. For still others, we shall have to think in terms of *humane care* of long duration.

B. We have the complex but fairly well identifiable group of children who are born with, or have acquired, the Mental Retardation Syndrome. This group, and as a group, is probably fairly well served although certain social and perhaps economic improvements are desirable, such as the implementation of Maine's Guardianship Act of 1969. The re-

quirements of this group are comparable to those in Group A.

C. Next, we must consider a group of disabilities that are neither grossly physical nor comparable to those of the retarded. They are more subtle, perhaps much less conspicuous, and, therefore, are sometimes overlooked or even ignored. They include youngsters with sensory impairment, perceptive or conceptualizing impairments as the result of minimal brain damage or of genetic origin. They include others with minor epileptic seizure patterns including psychomotor epilepsy (in the extreme with rage reaction). In keeping with the symptomatology, therapeutic intervention has to be specific and may be complex. Needed assistance can be limited to effective medication or may mean a whole array of specialized services for longer or even long periods of time. Similarly, the outcome may mean restitutio ad integrum or various forms of semi-dependent or dependent life styles. This group, historically, is the most neglected at this particular time and should receive maximum attention.

D. A fourth group of youngsters who manifest variously serious forms of psychological adjustment problems as evidenced in emotional and social maladaptation is well known and identifiable, and, indeed, identified. (See the "Diagnostic and Statistical Manual" of the American Psychiatric Association, 1968).

These then are four major groups of developmental disabilities. It is important to identify them if we are to plan for a comprehensive program of fundamental services that do not neglect children with disabilities exclusively in any one of these groups. Significantly, however, the individual child can be simultaneously affected in *more* than just one of the four developmental disability areas, and this fact gives cogent support for an integrated global program dealing with all such disabilities.

Commonly, symptoms in multiple areas can be caused by a primary etiology, such as maternal rubella in earlier pregnancy, anoxia at birth, and a host of others. Such etiologies although they may touch one child narrowly within a single area of disability, may also affect another child in several or all of the four major areas.

Commonly also, symptoms in multiple areas can be caused by the conditions of a chronologically primary area of developmental disability creating, in time, mild or severe effects in other major areas of developmental disability. For example, the "uncomplicated" mental retardation syndrome, because of the individual's self awareness and the reactions of others to him, can indirectly cause the development of significant psychological problems. Indeed, some authorities would have it that there exists no mentally retarded child without psycho-

logical problems. Conversely, a chronologically primary psychological problem in a child, if unremedied, for a period of several years, may so impede normal sociocultural development as to create actual mental retardation that is measurable in terms of lowered I.Q.

When more than one single major developmental disability area exist, however caused or created, these areas can and do become interactive, mutually exacerbating one another, and thus intensifying the child's overall pathological condition.

In this connection, two other areas, broadly defined, deserve mention — the one composed of the various forms of juvenile delinquency (including drug abuse, which appears at increasingly younger age levels), and the other composed of the various forms of academic failure. Of almost universal economic, social, and personal interest or concern, these areas are often etiologically interrelated with the four major developmental disability groups. We should in fact ask ourselves what percentage of children's problems that are "recognized" and "treated" (or not treated) as juvenile delinquency or academic failure, are basically and originally referable to one or more of the four major developmental disability areas. We should ask also what effect proper diagnosis and treatment, given early or even late, would have had or might still have upon these problems. It should be stressed that each and every one of the four disability groups is potentially capable of causing harmful effects and behavior in the areas of academic failure and juvenile delinquency.

In describing the need for an integrated program, we ought to make further note of the complexity of the interrelations of the several areas. The table below, which lists the four developmental disability areas, and the academic and delinquency problem areas as well, gives suggestion of which chronologically primary areas may directly or indirectly create symptoms in chronologically secondary areas.

The qualifications and particulars of the causal relationships are not detailed here, as this would make for too long a presentation. Therefore, the nature of some of these relationships may not be superficially apparent.

CHRONOLOGICALLY PRIMARY CONDITION	CHRONOLOGICALLY SECONDARY CONDITIONS CAUSED BY CHRONOLOGICALLY PRIMARY CONDITION			
	Sensory- M-R Syndrome	Psychol. Percept.- Conceptual Problems	Academic Adjustment Failure	Juvenile Delin- quency
Primarily Physical	X	X	X	X
M-R Syndrome	—	X	X	X
Sensory-Percept.- Conceptual	X	—	X	X
Psychol. Adjustment Problems	X	—	X	X

Suggested has been the complex interrelatedness that can exist among the major developmental disability groups. As dissimilar as they are, these groups even when considered as absolutely separate entities have in common several needs (1) and can be functionally categorized (2):

1. Diagnosis
Treatment
Care
Medical
Psychological
Educational
Vocational
Rehabilitative
2. Prognosis and
Integration
More or less total restitution.
(Independent living). Various
degrees of interdependence or
dependence.

Thus it would seem logical that children and adolescents who require specialized professional services for reasons of a specific disability or disabilities should be given those services *where they exist before starting new ones.*

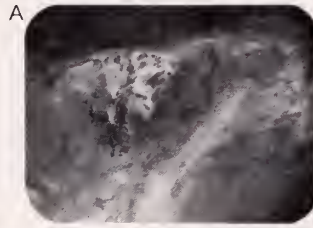
- A. Acute, complex medical intervention of a short term nature is to take place at a sophisticated medical center,
- B. Continued care for habilitative or rehabilitative purpose of conditions responding to outpatient care should receive these services as *non-residents.*
- C. Continued care outlined under B, but requiring residential care for extended or even longer periods of time is to take place at the residential care center, a sheltered workshop, a boarding home or nursing home depending upon the individual's needs.

Note should be made here on such services, as provided under a comprehensive single system, regarding their relevancy to the problems and needs of the child who has handicaps in several major developmental disability groups.

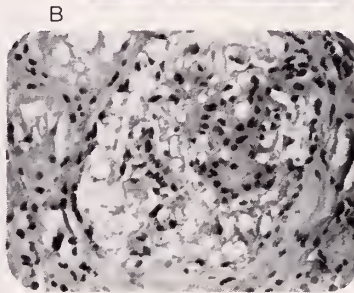
If these services co-exist as separate, dis-coordinated facilities, each dealing with a different developmental disability area, a number of rather severe functional disadvantages present themselves in regard to the treatment for this type of child. For example, there can be needless parental or sponsoring agency pilgrimaging about from one facility to the next before the "almost right" (or almost wrong) one is arrived at. Further, an inappropriate facility may benevolently provide inappropriate treatment for a child because he has problems, but essentially his *minor* ones, in the facility's province. Or a facility may relevantly treat a child's major disability in its own province yet neglect his major and minor disabilities in other areas. Or a facility may dismiss a child from its province altogether, although the child may have *some* disabilities in this area, because the facility sees the bulk of the child's problems being in other

Continued on Page 109

What's wrong with this "patient"?*



NOTE:
a variety of typical diagnostic
signs from three patients are
combined



Supplementary Vitamins in Chronic Disease Therapy

Diet, alone or in association with oral hypoglycemics or insulin, can usually lower blood sugar. But high blood sugar is only part of the diabetic patient's problem. Because if he fails to adhere to the prescribed diet and limits his diet too strictly, vitamin deficiency may result. In fact, any patient with chronic disease, poor diet and insufficient appetite — including the geriatric patient — may be heir to vitamin deficiency.

Therapeutic Berocca Tablets, when indicated, can supplement inadequate dietary supplies of essential B-complex and C vitamins in prolonged or wasting diseases. The 500 mg vitamin C in each tablet can help make certain the patient is getting an adequate supply of this agent, a substance involved in tissue repair and collagen formation, among other actions.

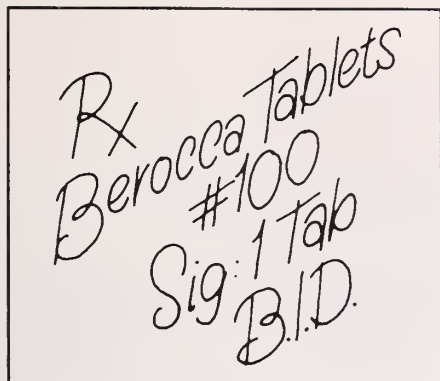
When nutritional
supplementation is indicated
in chronic disease

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With balanced, high potency
vitamin B-complex and 500 mg vitamin C
Virtually no aftertaste or unpleasant odor
Low priced Rx formula

*Diagnosis appears on next page.

Please see next page for a summary of
product information.



DIAGNOSIS: Certain manifestations of diabetes mellitus are revealed in these photographs: (A) fundus shows neovascularization and marked retinal scarring (male, age 23); (B) biopsy of kidney shows early diabetic intercapillary glomerulosclerosis (male, age 35); (C) photos 1 & 2 show edema and loss of the plantar arch (female, age 59); (D) lateral x-ray (same patient) shows dropped arch and hypertrophic and destructive changes of tarsal and metatarsal joints (Charcot's arthropathy); (E) AP confirms hypertrophic and destructive changes in (D).

Please see complete product information, a summary of which follows:

Each Berocca Tablet contains:

Thiamine mononitrate (Vitamin B ₁)	15 mg
Riboflavin (Vitamin B ₂)	15 mg
Pyridoxine HCl (Vitamin B ₆)	5 mg
Niacinamide	100 mg
Calcium pantothenate	20 mg
Cyanocobalamin (Vitamin B ₁₂)	5 mcg
Folic acid	0.5 mg
Ascorbic acid (Vitamin C)	500 mg

Indications: Nutritional supplementation in conditions in which water-soluble vitamins are required prophylactically or therapeutically.

Warning: Not intended for treatment of pernicious anemia or other primary or secondary anemias. Neurologic involvement may develop or progress, despite temporary remission of anemia, in patients with pernicious anemia who receive more than 0.1 mg of folic acid per day and who are inadequately treated with vitamin B₁₂.

Dosage: 1 or 2 tablets daily, as indicated by clinical need.

Available: In bottles of 100.

DEVELOPMENTAL DISABILITIES

Continued from Page 107

areas; and needless to say, such a policy of logical exclusion if universally practiced would make for a child's dismissal by *all* relevant facilities when the child had several major syndromes or a wide scattering of minor symptoms in several developmental disability provinces.

A unified and general facility that is able to deal with all multiple disability provinces under one figurative organizational roof resolves the problems created by the scattered single facilities, and affords additional advantages as well. Such a comprehensive facility provides a complete analytical and descriptive profile of all the elements or sub-elements of disabilities which in their various combinations in individual children are distributed among two or more disability provinces. In addition, this facility furnishes an exactly matching profile of treatment for the particular expressions of disabilities, of whatever distribution. In those relevant cases of multiple involvement, the comprehensive facility can also determine appropriate priorities of etiology and treatment.

Whether the services of a unified and comprehensive system for dealing with developmental disabilities recommend themselves to us because of their economy of operation or because of their widely and efficiently inclusive applicability, all of us, as professionals, clearly have the collective vast experience and sufficient knowledge to provide these services.

What remains unresolved, unfortunately, is the jurisdictional confusion caused, in part, by the emotional needs of individuals and groups to retain and preserve, at any cost, historical identities that we can respect but whose existence we can no longer support.

Much has been stated publicly, in recent years, about the soaring costs of hospitalization and medical care. Little effort has been applied to objectively analyse ALL of the reasons why these costs have been escalating. In fact, it appears that such an analysis has been carefully avoided by those who should seek it.

With this observation, we wish to conclude that the effectiveness and economy of providing adequate and appropriate diagnostic treatment and rehabilitative services will depend, in large measure, upon our willingness and ability to break down barriers erected by historical precedent and parochial thinning, by ego needs of empire builders and considerations that are not primarily related to the task of giving effective service under appropriate circumstances, and, economically.

This, to us, is our foremost responsibility at this juncture.

56 Baribeau Drive, Brunswick, Maine 04011

Special Article

Rheumatic Fever II: Diagnosis

Rheumatic Fever is a preventable, recurrent disease which follows by two to three weeks a preceding Group A streptococcal infection. The exact pathogenesis is unknown. There is no single laboratory test, symptom or sign which is pathognomonic of this disease and the diagnosis is based on a *combination* of clinical findings.

The diagnostic criteria originally proposed by Jones have proved valuable in preventing overdiagnosis and are recommended by the American Heart Association. Some patients, especially those with acute polyarthritis, may present a clinical syndrome which fulfills the original Jones criteria which *may not* be due to rheumatic fever. In these patients, the importance of establishing *antecedent* streptococcal infection is emphasized.

The criteria are designed to establish the diagnosis during the *acute* stage of rheumatic fever.

The categories of diagnostic criteria are based on the *diagnostic* importance of a clinical finding and can not be used to judge prognosis, measure rheumatic activity or establish the diagnosis of inactive rheumatic fever.

The presence of two major or one major and one minor criteria indicates a high probability of the presence of rheumatic fever if *supported by evidence of a preceding streptococcal infection*.

MAJOR MANIFESTATIONS

Carditis: Almost always associated with a *significant* systolic murmur (i.e., an apical mid-diastolic murmur or a basal diastolic murmur). The presence of cardiomegaly pericarditis with a friction rub or effusion or congestive heart failure strengthen the diagnosis.

Polyarthritis: Almost always migratory and with *objective* signs of swelling, redness, heat, tenderness. (Arthritis alone is not a major manifestation.)

Chorea: Must be differentiated from tic, athetosis or restlessness.

Erythema Marginatum: An effervescent migratory pink rash with pale centers and serpiginous margins, variable in size, mainly on the trunk, never on the face and non-pruritic.

Subcutaneous Nodules: Firm, painless nodules without adhesion of the overlying skin, mainly on extensor surfaces of joints.

MINOR MANIFESTATIONS

Clinical features which occur in rheumatic fever but also in other diseases and therefore their diagnostic value is minor and the usefulness consist in

JONES CRITERIA (REVISED) FOR GUIDANCE IN THE DIAGNOSIS OF RHEUMATIC FEVER*	
MAJOR MANIFESTATIONS	MINOR MANIFESTATIONS
Carditis	Clinical Previous rheumatic fever or rheumatic heart disease
Polyarthritis	Arthralgia
Chorea	Fever
Erythema Marginatum	Laboratory Acute phase reactions
Subcutaneous Nodules	Erythrocyte sedimentation rate, C-reactive protein, leukocytosis Prolonged P-R interval
SUPPORTING EVIDENCE OF STREPTOCOCCAL INFECTION	
Increased Titer of Streptococcal Antibodies ASO (antistreptolysin O) Other Antibodies Positive Throat Culture for Group A Streptococcus Recent Scarlet Fever	

*The presence of two major criteria, or of one major and two minor criteria, indicates a high probability of the presence of rheumatic fever. Evidence of a preceding streptococcal infection greatly strengthens the possibility of acute rheumatic fever. Its absence should make the diagnosis doubtful (except in Sydenham's chorea or long-standing carditis).

supporting the diagnosis of rheumatic fever in patients with at least one *major manifestation*: history of rheumatic fever, arthralgic, fever, elevated ESR and EKG changes. Evidence of preceding streptococcal infection greatly strengthens the possibility of acute rheumatic fever. The most reliable evidence is a rising ASO titer. Single titers of 250 T units in adults and 333 T units in children over age 5 are considered increased. About 20% of patients in the early stages of acute rheumatic fever have low ASO titers and in these instances it is advisable to obtain another streptococcal body test such as the antihyaluronidase, or the antistreptokinase or the anti-DNA-ase.

A rise in titer of 2 dilution tubes or more can be demonstrated for at least one of the streptococcal antibodies and almost all primary, as well as recurrent, attacks of rheumatic fever.

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Rheumatic Fever Committee

Dosage and Choice of Parenteral Strong Analgesics

RUSSELL R. MILLER, Pharm.D., Ph.D.*

A recent study by R. M. Marks and E. J. Sachar¹ indicates that medical patients with severe pain often endure much needless suffering because of undertreatment with strong analgesics. Since the misconceptions that lead to undertreatment exist among even the best trained physicians, analgesic prescribing practices at several Maine hospitals and the New England Medical Center Hospital have been investigated. The findings of this inquiry and a brief summary of Marks' and Sachar's study are presented herewith.

Trademark names, optimal adult doses, and the duration of action of commonly prescribed parenteral strong analgesics are listed in Table 1. Doses given are the average optimal subcutaneous or intramuscular doses for relief of moderately severe pain in adults. Since meperidine is the most frequently used parenteral analgesic, the following discussion is primarily concerned with this drug. Codeine is not included in this discussion because it is classified as a mild analgesic by most authorities. Several studies have shown codeine to be significantly inferior to morphine while exhibiting most of the latter's untoward effects.^{2,3}

Marks and Sachar found in their study (at the Montefiore Hospital and St. Luke's Hospital in New York) that 27 (73%) of 37 medical inpatients continued to experience moderate or severe distress after being given analgesics parenterally for at least 48 hours. Chart review suggested significant undertreatment with narcotics. For 29 of the patients, meperidine was prescribed on a "q4h" schedule, although three hours is the average duration of this drug.⁴ Further, most patients actually received an average of only two injections in 24 hours; none received more than four injections. (Most patients received narcotics on a "prn" basis.)

Only one patient received a dose of 100 mg; 12 patients were given 75 mg as the maximal dose, 22 were given 50 mg, and 2 were given 25 mg. Well designed studies have shown that doses of narcotics equivalent to meperidine 50 mg are inadequate for

Generic Name	Trademark Name	Dose (mg)	Average Duration of Action (hours)
Alphaprodine	Nisentil®	40-60	1-2
Anileridine	Leritine®	30-40	2-3
Hydromorphone	Dilaudid®	1.5	4
Meperidine	Demerol®	100	3
Morphine	—	10	4-5
Pentazocine	Talwin®	30-60	3

Hospital	Unit Doses		
	50 mg	75 mg	100 mg
Maine Medical Center, Portland	46%	36%	18%
St. Josephs Hospital, Bangor	34%	34%	32%
Augusta General Hospital, Augusta	26%	36%	38%
Mercy Hospital, Portland	30%	44%	26%
New England Medical Center Hospital, Boston	54%	31%	15%

most adult patients; doses of 62 to 72 mg will relieve only about two-thirds of patients in severe pain; and 82 to 100 mg will provide relief with minimal adverse reactions in most of the remainder.¹

Purchasing data for meperidine at several Maine hospitals and the New England Medical Center Hospital during 1973 are shown in Table 2. Assuming these purchasing data reflect actual usage, it would appear that meperidine may be given in sub-optimal doses to a significant number of patients at these hospitals.

Marks and Sachar found that house staff physicians underestimated the effective dose range of strong analgesics, overestimated their duration of action, and exaggerated the dangers of addiction for medical patients receiving meperidine in a therapeutic dosage range. The risk of addiction in hospitalized patients who receive therapeutic doses of narcotic analgesics at regular intervals for prolonged periods is very low, probably less than 1%. Addiction is defined as a "behavioral pattern of compulsive drug use characterized by overwhelming involvement with the use of a drug, the securing of its supply, and a tendency to relapse after withdrawal."⁵ Physical dependency is a frequent and important element of addiction, but it is not absolutely necessary. Even former meperidine addicts

*Dr. Miller is Principal Investigator of the "Program to Improve Pharmacy Services in the State of Maine," a joint project of the departments of pharmacy of the Maine Medical Center, Portland, and the New England Medical Center Hospital, Boston. Funds for this program are provided by the Bingham Associates Fund. Correspondence concerning this article should be directed to Dr. Miller, Box 420, New England Medical Center Hospital, 171 Harrison Ave., Boston, Massachusetts 02111.

who were treated with meperidine at a dosage level of 600 mg per day for two to four weeks had only a mild and insignificant withdrawal syndrome.⁶

While the risk of addiction is very low, there is a high probability of some withdrawal symptoms in patients who are abruptly withdrawn from narcotics after receiving therapeutic doses for prolonged periods. A mild degree of sleep disturbance and rhinorrhea can be expected.

With regard to the choice of a strong analgesic, an examination of Table 1 is instructive. Alphaprodine and anileridine are useful only in those situations where pain relief of short duration is needed; they are not useful in patients with chronic pain.

Meperidine also has a relatively short duration of action in most patients, therefore it is less useful than morphine in this respect. Further, since meperidine has no significant advantage over morphine with regard to adverse effects⁷ and is not as effective as morphine in relieving severe pain, even in high doses,⁸ its widespread use is undeserved.

Hydromorphone has no advantage over morphine with respect to analgesic efficacy and adverse reactions, and it has a somewhat shorter duration of action.

Pentazocine also has a shorter duration of action than morphine. Since the optimal dose of pentazocine in severe pain varies considerably,^{9,10} its usefulness is further limited. Pentazocine has also been shown to have a high frequency of neuropsychiatric adverse effects¹¹ and is not devoid of dependence liability.¹² However, it is not classified as a "narcotic" since it is not subject to control under the Controlled Substances Act of 1970.

Morphine is the analgesic of choice for the relief of chronic severe pain. It has a relatively long duration of action of 4 to 5 hours; the optimal dose has been shown to be 10 mg/70 kg in a well-designed study.¹³ Morphine can cause respiratory depression, spasm of the gastrointestinal and biliary tracts, and other adverse effects, but there is no conclusive evidence that these effects occur more often than with meperidine.

Suboptimal doses of morphine and other strong analgesics are justifiable when the pain is of only moderate severity (in which case aspirin or some other oral analgesic may be just as efficacious); when other depressants of the central nervous system, such as sedative-hypnotics, psychotherapeutic agents, or antihistamines are coadministered; or when the patient is prone to develop an undesirable degree of respiratory depression.

The practice of prescribing strong analgesics on a "prn" basis is justifiable since many types of pain, especially those due to trauma, subside in intensity over the course of 24 to 48 hours or less and may

vary in intensity at different times of the day. Further, if a patient is sleeping comfortably, he should not be awakened for an injection. On the other hand, nurses should not hesitate to administer strong analgesics as frequently as prescribed if the patient is experiencing discomfort. The physician should not hesitate to increase the dose of a strong analgesic if it fails to provide adequate pain relief. Patients often become excessively preoccupied with the analgesic drug when they are receiving inadequate doses or are receiving doses on a too infrequent schedule, and this may encourage a behavior pattern which is often interpreted by medical staff as one of dependence or addiction.

In summary, morphine continues to be the parenteral strong analgesic drug of choice by virtue of its incomparable analgesic efficacy, its relatively long duration of action, and its lack of inferiority with respect to the frequency and severity of adverse reactions observed with all strong analgesics when given in equi-analgesic doses. Strong analgesics should be prescribed in optimal doses and given at intervals which correspond to their documented duration of action. Finally, all physicians should objectively reexamine the irrational connotations that are often associated with the use of narcotic analgesics.

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Laboratory Aspects of Gonorrhea Control, II

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Despite the fact that the causative agent of gonorrhea has been known for almost a century, a completely satisfactory means of laboratory diagnosis is not yet available. Laboratory technology has moved far beyond the original stained smear diagnostic phase of a century ago to the contemporary use of media such as Thayer-Martin which allows for the on-site cultural diagnosis and Transgrow which is both a transport and a culture medium. Use of these two media has improved laboratory diagnosis to a much higher level of sensitivity (around 90%) and to 100% specificity providing definitive identification procedures are incorporated into the procedure. With the more sensitive cultural tests being available, diagnosis in the symptomatic patient is on a much firmer base and routine screening for asymptomatic disease is practical. However, screening by culture has some limitations as it is not inexpensive, it requires medical personnel time to secure the specimen and it may be of some embarrassment to the female patient. An alternative approach, which would avoid these limitations, would be to use a serologic test as in syphilis. Numerous attempts have been made to develop such a test but the limitations of inadequate sensitivity and specificity precluded usage of any of the devised procedures. A gonorrhea diagnostic kit was on the market briefly during recent months but was withdrawn. An analysis by the Chief of the Venereal Disease Branch, Center for Disease Control, of the data provided by the manufacturer in support of kit usage played a role in the withdrawal. This product was advertised widely and numerous inquiries were received by the Public Health Laboratory for an opinion regarding its usage. The test was not recommended. Cultures, particularly through use of Transgrow, continue to be recommended as the test of choice. It is expected that other tests may be forthcoming in the very near future because of the

need for a reliable serologic test. Similar analyses will be made of the newer tests as they appear.

In the following paragraphs, the analysis of data which was the basis for withdrawal of the kit is paraphrased from the original report. Additionally, some data derived from two studies in males supporting the concept that the male can be a carrier are presented. Finally, a few figures are given from a gonorrhea complications study by the U.S. Public Health Service.

Analysis of the manufacturer's data is difficult because they are drawn from work in several geographic areas by several investigators using different means of measurement with varying results. It is possible only to summarize and draw conclusions in a broad and general way.

In appraising the test, the target populations are divided into high risk groups and low risk groups. The high risk group are patients coming to clinics with symptoms of venereal disease, both male and female. The low risk group is composed of both sexes seen in situations other than venereal disease clinics.

Data on 1,820 males in the high risk category showed 1,015 were culture and/or smear positive. Dividing these cases into those with a past history of gonorrhea and those status was unknown, the serologic test was positive 55% in the first group and 77% in the second. These figures would indicate a lack of sensitivity of such magnitude as to eliminate the test as a diagnostic choice particularly during the acute phase of the disease. The remainder of the original group were negative by culture and smear technics. Of those who had a past history of disease, 38% had a positive serology and of those without or an unknown history, 34% had a positive serology. Presumably the high risk group presented themselves because of symptoms in which case a Gram stained smear, with a reliability (sensitivity and specificity) of 95%, would be adequate for diagnosis and any additional or more elaborate testing unnecessary.

Similarly, data on 859 females attending venereal

*Director, Public Health Laboratory.

disease clinics showed 385 with positive cultures. The serologic test was positive in 82% of 108 women with a past history of gonorrhea and in 72% of those whose history was unknown. Among the 474 women with a negative culture, the serology was reactive in 63% of those with a past history of gonorrhea and 47% in those with an unknown history. It is suggested that lacking evidence to the contrary, the proportion of gonorrhea cases in high risk women which are positive by serologic means but negative by culture is far smaller than the 20-30% of cases which are culture positive and serologically negative. The use of serology testing in lieu of cultures to screen this group is not indicated.

In the low risk male group, 254 patients were examined and a yield of four with positive cultures was obtained, all with previous history of gonorrhea, two of whom were positive serologically. A negative culture was obtained from 15 males who had a history of gonorrhea and the serology was positive in all 15. This latter finding might suggest the use of serology to detect the asymptomatic male carrier but because of the scarcity of well controlled studies on screening this category by culture, attempts to screen serologically should await cultural studies.

Finally, 740 low risk females were examined with both tests. Nine patients, all of whom had a gonorrhea history, had positive cultures of which four were positive serologically. Of the 731 with negative cultures, the serology was positive for 70% in those with a history of gonorrhea and 3.6% positive for those with an unknown history. Data is not available for those asymptomatic females without prior history of disease which is a group for which serologic testing would be useful.

To summarize, cultures for men and women and the Gram stain for men are far more sensitive and specific than this particular serologic test. It would appear that cultures remain the choice for diagnosing gonorrhea in the asymptomatic as well as the symptomatic individual. When a serologic test is made available, meeting the criteria of appropriate sensitivity and specificity for screening asymptomatic individuals, these pages will carry notice to this effect.

The existence of the asymptomatic female gonor-

rhea patient is well known as is her corollary role in the dissemination of the disease. There have been two studies reported in recent months with evidence that the asymptomatic male exists and is a potential transmitter of the disease. As the female reservoir of disease is reduced through screening and treatment, the relative importance of the male carrier will become evident. The studies show that among groups of male contacts of symptomatic gonorrhea females 40-70% of them were asymptomatic but yielded gonococci on culture. In one series, 28 asymptotically infected men were followed without treatment for periods of 7 to 165 days; 18 of them remained asymptomatic carriers of the organism for a median period of 21 days. Five of the original group became symptomatic after periods of 12 to 90 days. Interestingly, 5 patients evidenced spontaneous cure after periods of infection of from 1 to 30 days. A prevalence figure for male carriers has not been determined but it is reasonable to assume they provide a significant reservoir of infection. The implication of these observations is that efforts should be made to bring to medical attention the male sexual contacts of every female patient diagnosed as having gonorrhea.

In the gonorrhea complications study, it was found that 17% of the study females known to have the disease developed pelvic inflammatory disease. Projected nationally this translates into 213,800 cases of PID annually. Among the PID patients, 4.5% required surgical sterilization which translates to 9,600 per year nationally. Almost 1,000,000 school days are lost each year by females in this country because of gonorrhea and its complications. On any given day, 5,750 girls will be absent from school because of gonorrhea. Figures from the study projected nationally show direct costs of \$131 million from female gonorrhea complications ignoring indirect costs such as lost wages, etc. It is not suggested that these statistics are applicable to Maine because the Maine rate for reported cases is about one-third that in the study area. It does suggest that gonorrhea has a heavy impact in the form of complications and that the disease should never be characterized as nothing more consequential than a severe head cold.

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Write a letter with the coupon below to the AMA or see the JAMA Convention Issue on April 15, 1974, for scientific session lists, hotel reservations, and course registrations—as well as social activities while in Chicago this June.

Advance Registration

123rd AMA Annual Convention
June 22-26, 1974
Chicago/McCormick Place

Please return this form before May 24, 1974, to:
Circulation and Records Department
American Medical Association
535 North Dearborn Street
Chicago, Illinois 60610

Please print

Name _____

(each physician must register in his own name)

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I am a member of the AMA through the following State Medical Association or government service _____

Please send more information on the charter flights being planned from:

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In accordance with the AMA Bylaws, I hold active membership in the AMA, and I wish to vote in the Scientific Session I have checked:

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General Registration

- ____ AMA members and their guests: no fee
____ Non-member physicians: \$25
____ Guests of non-members: \$5
____ Medical students, interns and residents: no fee

My remittance of \$_____ is enclosed.
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*Innes, I. R., and Nickerson, M., in Goodman, L. S., and Gilman, A. (editors): The Pharmacological Basis of Therapeutics, ed. 4, New York, The Macmillan Company, 1970, p. 537.

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occur as well as mydriasis and blurred vision. In addition the following adverse reactions have been reported: nervousness, drowsiness, dizziness, insomnia, headache, loss of the sense of taste, nausea, vomiting, constipation, impotence and allergic dermatitis.

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Program – 121st Annual Session

Maine Medical Association

June 15, 16, 17, 18, 1974

Shawmut Inn, Kennebunkport

Arranged by the Scientific Committee

ALAN W. BOONE, M.D., Bangor
Chairman

BRADLEY E. BROWNLOW, M.D., Blue Hill

ROBERT H. PAWLE, M.D., Falmouth

The Scientific Program of the annual meeting of the Maine Medical Association is made possible by the cooperation and assistance of the Technical Exhibitors and the following organizations:

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Maine Chapter, American Academy of Family Physicians

Maine Chapter, American College of Surgeons

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Specialty Groups

Maine Chapter, American Academy of Pediatrics

Maine Society of Anesthesiology

Maine Society of Internal Medicine

Maine Section, American College of Obstetricians and Gynecologists

Maine Academy of Orthopedic Surgeons

Section on Ophthalmology of the M.M.A.

Maine Neurosurgical Society

Maine Psychiatric Association

Maine Radiological Society

Maine Thoracic Society

For this cooperation and support, the members of the Scientific Committee are grateful.

Information

Registration:

Registration throughout the session will be in the Lobby at the Shawmut Inn. Registration fee \$2.00.

Saturday, June 15 — 12:00 M. to 5:00 P.M.

Sunday, June 16 — 9:00 A.M. to 5:00 P.M.

Monday, June 17 — 9:00 A.M. to 6:00 P.M.

Tuesday, June 18 — 9:00 A.M. to 4:00 P.M.

Telephone: The number at the Shawmut Inn is Kennebunkport, (207) 967-3931.

Visiting Delegates:

Introduction of Visiting Delegates will take place at meetings of the House of Delegates on Saturday, June 15 and Sunday, June 16.

Technical Exhibits:

This year, twenty-two companies are contributing to the success of the annual session program by participating in the Technical Exhibits. A list of the exhibiting companies and representatives will be found on pages 119 and 120 of this program.

Please show your appreciation for the support of these companies by visiting these exhibits.

Badge Code:

Badges with green borders indicate Officers, Past Presidents, Delegates and Alternate Delegates of the M.M.A.; yellow borders, members of the M.M.A.; blue borders, guests; red borders, exhibitors; and plain white for the members of the Woman's Auxiliary.

Saturday, June 15

2:00 P.M. First Meeting of the House of Delegates

Call to Order: PAUL A. FICHTNER, M.D., President

Presiding: Speaker of the House, GEORGE W. BOSTWICK, M.D.

Presentation of the A. H. Robins' Physician Award for Community Service

Presentation of the Maine Blue Cross and Blue Shield "Award of Appreciation"

7:30 P.M. Dinner

Sunday, June 16

9:30 A.M. Reference Committee Meetings

12:30 P.M. Luncheon

2:00 P.M. Second Meeting of the House of Delegates

Election of President-elect and Executive Committee District Members

General Assembly (Immediately following the House of Delegates)

7:30 P.M. Lobster Bake

Monday, June 17

Scientific Program

9:30 A.M. to 12:30 P.M.

Welcome — ALAN W. BOONE, M.D.

9:30 A.M. **Hypertension: Who, When, Where and Why?**

WILLIAM P. CASTELLI, M.D., Director of Laboratories, National Institutes of Health, National Heart Institute, Heart Disease Epidemiology Study, Framingham

10:30 A.M. **Recent Advances in the Treatment of Cancer**

JACOB J. LOKICH, M.D., Assistant Professor of Medicine, Harvard University, Adult Chemotherapy Section, Children's Cancer Research Foundation, Boston

11:30 A.M. **Acute Childhood Leukemia: Clinical Aspects and Advances in Treatment**

NORMAN JAFFE, M.D., Assistant Professor of Pediatrics, Harvard University and Administrative Chief, Out-Patient Tumor Therapy Clinics, Children's Cancer Research Foundation, Boston

12:30 to 2:00 P.M. Luncheon

Scientific Program

2:00 to 4:00 P.M.

Welcome — ALAN W. BOONE, M.D.

Sponsored by the Maine Chapter, American College of Surgeons and the Maine Trauma Committee

Presiding — FERRIS S. RAY, M.D., President, Portland

2:00 P.M. **Burn Care**

JOSEPH C. MCALHANY, JR., M.D., Major, MC, Burn Study Branch, Brooke Army Medical Center, Fort Sam Houston

6:00 P.M. Social Hour, Dutch Treat

7:00 P.M. **Annual Banquet**

Presentation of Honorary Pins

President's Address: PAUL A. FICHTNER, M.D.

Tuesday, June 18

Scientific Program

9:30 A.M. to 12:30 P.M.

Welcome — BRADLEY E. BROWNLOW, M.D.

9:30 A.M. **The Brain and Modern Medicine**

RICHARD N. HARNER, M.D., Associate Professor of Neurology, Chief of Neurology and Electroencephalography, The Graduate Hospital, University of Pennsylvania, Philadelphia

10:30 A.M. **Foot Problems in Family Practice**

ROBERT H. BROWN, M.D., Director of Rehabilitation, Eastern Maine Medical Center, Bangor

11:30 A.M. **Current Concepts in the Evaluation and Management of Patients With Ischemic Heart Disease**

MICHAEL V. HERMAN, M.D., Associate Professor of Medicine, Harvard University and Director, Cardiac Catheterization Laboratory, Peter Bent Brigham Hospital, Boston

12:30 to 2:00 P.M. Luncheon

visit
the technical
exhibits

BEFORE AND AFTER EACH
SESSION AND DURING INTERMISSIONS

Scientific Program

2:00 to 4:00 P.M.

Welcome — ROBERT H. PAWLE, M.D.

Sponsored by the Maine Medico-Legal Society

Presiding — PETER T. DAWSON, Esq., President,
Augusta

2:00 P.M. Subject to be announced

FREDERICK B. JORDAN, M.D., Assistant Chief Medical Examiner, State of Oklahoma and Assistant Professor of Pathology, University of Oklahoma Health Sciences Center, Oklahoma City

3:00 P.M. Subject to be announced

LOWELL J. LEVINE, D.D.S., Consultant in Forensic Dentistry, Office of Chief Medical Examiner, City of New York

Specialty Group Meetings

Monday, June 17

2:00 P.M. MAINE SOCIETY OF INTERNAL MEDICINE AND THE MAINE THORACIC SOCIETY

Business Meeting

2:30 P.M.

BENJAMIN ZOLOV, M.D., Portland, President, presiding

Recent Advances in Pulmonary Medicine

BARRY L. FANBURG, M.D., Associate Professor of Medicine, Tufts University School of Medicine and Chief of Pulmonary Division, New England Medical Center Hospitals, Boston

2:00 P.M. SECTION ON OPHTHALMOLOGY OF THE M.M.A.

PAUL E. FLOYD, M.D., Farmington, presiding

Indications for Argon Laser Photocoagulation of Ocular Disease

LLOYD M. AIELLO, M.D., Director, William P. Bee-tham Eye Unit, Joslin Clinic, Boston

2:00 P.M. MAINE CHAPTER, AMERICAN ACADEMY OF PEDIATRICS

MAURICE ROSS, M.D., Saco, presiding

4:00 P.M. MAINE NEUROSURGICAL SOCIETY

DANIEL A. ROCK, M.D., Lewiston, President, presiding

Tuesday, June 18

11:00 A.M. MAINE RADIOLOGICAL SOCIETY

Executive Committee Meeting

2:00 P.M.

ROBERT P. ANDREWS, M.D., Bangor, presiding

Neurological Radiology

BRUCE TREMBLY, M.D., Neurosurgeon, Waterville

3:00 P.M.

Business Meeting

2:00 P.M. MAINE SECTION, AMERICAN COLLEGE OF OBSTETRICIANS AND GYNECOLOGISTS

WARREN C. BALDWIN, M.D., Portland, presiding

Socio-economic Problems: Current and Prospective*

WARREN C. BALDWIN, M.D., State Chairman, Maine Section, A.C.O.G., Portland

*Dr. Baldwin will discuss an update of the above subject based on deliberations at the District Advisory Council Meeting in Boston in March and the National Advisory Council Meeting of A.C.O.G. in Las Vegas in April 1974.

2:00 P.M. MAINE PSYCHIATRIC ASSOCIATION

NICHOLAS FISH, M.D., Cumberland Foreside, President, presiding

Community Mental Health Centers

HENRY H. WORK, M.D., Director of Professional Affairs, American Psychiatric Association, Washington, D.C.

2:00 P.M. MAINE SOCIETY OF ANESTHESIOLOGY

PHILIP J. VILLANDRY, M.D., Portland, President, presiding

Honorary Pins

Presentation of the Association's Honorary Pins will be made by Paul A. Fichtner, M.D., President of the M.M.A., at the Annual Banquet, Monday evening June 17 at 7:00 P.M.

FIFTY-YEAR PINS

Fifty-Year Lapel Pins will be presented to the following members who were graduated from Medical School in 1924:

Androscoggin County

Merrill S. F. Greene, M.D., Lewiston
Harvard Medical School

Linwood A. Sweatt, M.D., Auburn
University of Vermont College of Medicine

Cumberland County

John M. Bischoffberger, M.D., Naples
Hahnemann Medical College of Philadelphia

Kennebec County

Arthur H. McQuillan, M.D., Oakland
Harvard Medical School

Francis H. Sleeper, M.D., Augusta
Boston University School of Medicine

Lincoln-Sagadahoc County

John M. Bachulus, M.D., Brunswick
University of Vermont College of Medicine

Somerset County

Maurice S. Philbrick, M.D., Fort Lauderdale, Florida
Harvard Medical School

FIFTY-FIVE-YEAR PINS

Fifty-Five-Year Pins will be presented to the following members who received Fifty-Year Pins in 1969:

Aroostook County

Storer W. Boone, M.D., Presque Isle
McGill University Faculty of Medicine

Knox County

Sallie H. Saunders, M.D., Camden
Tufts University School of Medicine

Piscataquis County

Norman H. Nickerson, M.D., Greenville
Bowdoin Medical School

SIXTY-YEAR PINS

Sixty-Year Pins will be presented to the following members who received Fifty-Year Pins in 1964:

Androscoggin County

James A. Williams, M.D., Mechanic Falls
Bowdoin Medical School

Cumberland County

C. Eugene Fogg, M.D., Peaks Island
Bowdoin Medical School

Piscataquis County

Harvey C. Bundy, M.D., Portland
University of Vermont College of Medicine

SIXTY-FIVE-YEAR PIN

A Sixty-Five-Year Pin will be presented to the following member who received his Fifty-Year Pin in 1959:

York County

Willard H. Bunker, M.D., York Harbor
Bowdoin Medical School

Annual Meeting

Woman's Auxiliary
to the
Maine Medical Association
Open to all Physician's Wives

Sunday, June 16

1:00 to 5:00 P.M. Registration
Lobby, Shawmut Inn, Kennebunkport

1:00 to 5:00 P.M. Recreational Program
Tennis, Swimming, Golf and Sailing
Advance reservations advised by June 1
MRS. BADI HAQ, Box 117, Kennebunk 04043

3:00 P.M. How to Manage Your Investments
GLEN WHITEHOUSE and GERRY LEARY
Merrill Lynch, Pierce, Fenner & Smith Inc.
Shawmut Inn

Monday, June 17

9:00 A.M. to 12:00 P.M. Registration
Olde Grist Mill, Mill Lane, Kennebunkport

9:30 A.M. to 12:00 P.M. Annual Business Meeting
Olde Grist Mill, Assembly Room
MRS. ROBERT S. LAFOND, presiding

12:00 P.M. Reception Honoring Regional Guests and
Maine Medical Association Executive Committee
Members

1:00 P.M. Annual Luncheon*
Olde Grist Mill, Dining Room
Hostesses: Cumberland and York County Auxiliaries

Guest Speaker — MRS. NORMAN H. GARDNER, Eastern Regional Vice-President, Woman's Auxiliary to the American Medical Association

Installation of 1974-1975 Officers

3:00 P.M. Adjournment

3:15 P.M. Meeting: 1974-1975 Board of Directors
Olde Grist Mill, Assembly Room

*Advance reservations by June 10 to Mrs. Thomas Fiorica, Church St., Chisholm 04222

Tuesday, June 18

A day for relaxation and visits to points of interest in the area.

Evening Programs

See the Maine Medical Association Program on preceding pages.

SPECIAL NOTICES

Executive Committee Meetings

The Executive Committee will meet on Saturday, June 15 and daily throughout the session at a time and place to be announced.

Luncheon

Maine Academy of Orthopedic Surgeons — Monday, June 17.

"Medicine Avenue"

Technical Exhibits

Abbott Laboratories, 14th & Sheridan Rd., North Chicago, Illinois 60064

The Alkalol Company, P.O. Box 964, Taunton, Massachusetts 02780
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Representatives: Mr. William Graham and Mr. Dave Hart

Bristol Laboratories, P.O. Box 657, Syracuse, New York 13201
Representatives: Mr. Robert Pogorelc and Mr. Richard Green

Burroughs Wellcome Co., 3030 Cornwallis Rd., Research Triangle Park, North Carolina 27709
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Fisons Corporation, 2 Preston Ct., Bedford, Massachusetts 01730

Lakeside Laboratories, Inc., Milwaukee, Wisconsin 53201
Representatives: Mr. Charles Weiner and Mr. Harry Eordekian

Lederle Laboratories, Pearl River, New York 10965

Life Support Equipment Corporation, 2 Gill St., Woburn, Massachusetts 01801

Maine Blue Cross and Blue Shield, 110 Free St., Portland, Maine 04101
Representatives: Mr. Jerry M. Merrill, Mr. Ralph B. Osgood and Mr. Donald Thompson

Mead Johnson Laboratories, Evansville, Indiana 47721
Representatives: Mr. Remi St. Onge and Mr. Guy Hunter

Medical Oxygen Service, Inc., 169 Bedford St., Burlington, Massachusetts 01803
Representatives: Mr. Thomas R. Burnham and Mr. Philip R. Black

Merrill Lynch, Pierce, Fenner & Smith Inc., 7 New England Executive Park, Burlington, Massachusetts 01803
Representative: Mr. Glendon R. Whitehouse

New England Physicians Advisory Services, Inc., 1 Wells Ave., Newton, Massachusetts 02159
Representatives: Mr. John J. Casey, Mr. James B. McAllister, Mr. David P. Gerstenblatt, Mr. Howard G. Clouse, Mr. Tony Payne and Miss Eileen M. O'Meara

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Searle Laboratories, Box 5110, Chicago, Illinois 60680

Representatives: Mr. David E. Gleason, Mr. Thomas K. Ordway and Mr. Alfred L. Grimes

Warner/Chilcott, Morris Plains, New Jersey 07950

County Delegates

DELEGATES

ALTERNATES

Androscoggin County Medical Association

Richard M. Swengel, M.D., Secretary	
Charles W. Steele, M.D.	Richard W. Taylor, M.D.
Albert Shems, M.D.	John W. Carrier, M.D.
Thomas F. Shields, M.D.	Lawrence A. Nadeau, M.D.
Behzad Fakhery, M.D.	Richard W. Turcotte, M.D.
Stanley D. Rosenblatt, M.D.	Richard A. Marshall, M.D.

Aroostook County Medical Society

Benoit Ouellette, M.D., Secretary	
Eugene G. Gormley, M.D.	Rodrigue J. Albert, M.D.
Eric F. Nicholas, M.D.	Arthur D. Pendleton, M.D.
Madjid Yaghmai, M.D.	William A. O'Brien, M.D.

Cumberland County Medical Society

Alfred E. Swett, M.D., Secretary	
John R. Davy, M.D.	Harry A. Bliss, M.D.
Irving J. Poliner, M.D.	William J. Hall, III, M.D.
Peter B. Webber, M.D.	Wesley J. English, M.D.
Robert G. Sommer, M.D.	Hugh P. Robinson, M.D.
Stephen E. Monaghan, M.D.	Paul Maier, M.D.
Douglas R. Hill, M.D.	Kirk K. Barnes, M.D.
Ronald J. Carroll, M.D.	Newell A. Augur, Jr., M.D.
George I. Geer, Jr., M.D.	Elio Baldini, M.D.
John F. Gibbons, M.D.	Carl A. Brinkman, M.D.
Walter B. Goldfarb, M.D.	John T. Dinan, Jr., M.D.
William L. MacVane, Jr., M.D.	Robert H. Pawle, M.D.
William H. Leschey, Jr., M.D.	Roland G. Ware, Jr., M.D.

Franklin County Medical Society

Hays G. Bowne, M.D., Secretary	
Harold I. Blumenstein, M.D.	Paul E. Floyd, M.D.

Hancock County Medical Society

John C. Van Pelt, M.D., Secretary

Kennebec County Medical Association

Kevin Hill, M.D., Secretary	
Richard E. Barron, M.D.	Charles E. Towne, M.D.
Earle M. Davis, M.D.	Howard H. Milliken, M.D.
George I. Gould, M.D.	Robert L. Shelton, M.D.
Raymond E. Culver, M.D.	Harry M. K. Peddie, M.D.
Anthony Betts, M.D.	Antoine A. Atallah, M.D.
Terrance J. Sheehan, M.D.	John T. Chen, M.D.

DELEGATES

ALTERNATES

Knox County Medical Society

David G. Reed, M.D., Secretary	
Janis Sube, M.D.	Allen F. Langhorne, M.D.
Richard J. Kahn, M.D.	Peter R. Shrier, M.D.

Lincoln-Sagadahoc County Medical Society

George W. Bostwick, M.D., Secretary	
Elihu York, M.D.	Frank O. Avantaggio, Jr., M.D.
Anthony J. Horstman, M.D.	Gilbert R. Rowan, M.D.

Oxford County Medical Society

John B. Makin, Jr., M.D., Secretary	
David L. Phillips, M.D.	Warren C. Hazelton, M.D.

Penobscot County Medical Society

Philip G. Hunter, M.D., Secretary	
Robert P. Andrews, M.D.	Franklin E. Bragg, II, M.D.
William M. Blackwell, M.D.	Philip R. Kimball, M.D.
John S. Houlihan, M.D.	Francis I. Kittredge, M.D.
John J. Pearson, M.D.	Jack N. Meltzer, M.D.
David M. Sensenig, M.D.	John A. Woodcock, M.D.

Piscataquis County Medical Society

Robert C. Cornell, M.D., Secretary	
Charles H. Lightbody, M.D.	John B. Curtis, M.D.

Somerset County Medical Society

John H. Steeves, M.D., Secretary	
Harland G. Turner, M.D.	Richard C. Taylor, M.D.

Waldo County Medical Society

Andrew J. Gay, M.D., Secretary

Washington County Medical Society

Karl V. Larson, M.D., Secretary	
Robert G. MacBride, M.D.	Donald M. Robertson, M.D.

York County Medical Society

Melvin Bacon, M.D., Secretary	
Carl E. Richards, M.D.	Owen O. Dow, M.D.
Badi-uz-Zaman M. Haq, M.D.	Maurice Ross, M.D.
S. Dunton Drummond, M.D.	Alexander W. Magosci, M.D.



RECIPROCITY SIMPLIFIES CLAIMS HANDLING

Demonstrating its effectiveness as the largest integrated system for nationwide health care coverage, Blue Shield has enrolled five million subscribers in its Reciprocity program. More than ten million Reciprocity subscribers are anticipated by the end of the year.

Reciprocity is designed to simplify the claims handling of Blue Shield patients who become ill or who are injured while away from home. It enables the physician to deal directly with his local Blue Shield Plan and eliminates complicated, confusing paperwork as well as speeds reimbursement for medical services.

Under the new program, a physician receives the Usual, Customary or Reasonable fee as determined by his local Blue Shield Plan.

When a doctor provides a covered medical service to a patient from an out-of-area Blue Shield Plan enrolled under Reciprocity, billings are made to, and payment will be made directly from the physician's own local Blue Shield Plan. In other words, claims are handled the same as for regular patients with Blue Shield coverage. Reciprocity subscribers can be easily recognized by their special identification cards.

This special ID card carries a double-pointed red arrow. The numbers printed inside the red arrow indicate the Plan issuing the card. In addition, the appropriate identification numbers are outlined in red.

When preparing a medical claim for services rendered to a Reciprocity patient, the local Blue Shield claim form is filled out in the usual fashion, with the exception that the code in the red arrow must be included in the space on the claim form reserved for "contract number" or "subscriber identification number."

Properly completed forms for Reciprocity subscriber claims are sent to the physician's local Blue Shield Plan along with all other regular claim forms.

Medicare recipients who are Blue Shield Reciprocity subscribers will carry both a red arrow card and a Medicare identification card. After the physician renders medical services, the number in the red arrow is included in the appropriate space on the Medicare Part B Request for Payment Form.

If the physician accepts Medicare assignment and the local Blue Shield Plan is the Medicare Part B carrier, this form is forwarded to that Plan.

If the physician accepts assignment and another

company is the local Medicare carrier, the completed Request for Payment form is forwarded to them. Both the patient and the physician receive an Explanation of Medicare Benefits (EOMB) from the insurance company. Either the patient or the physician (but not both) files the EOMB with Blue Shield. The numbers contained in the red arrow and those in the red box on the face of the card should be included when the claim is filed with the local Blue Shield Plan. The physician will receive reimbursement for both Medicare Part B and Blue Shield's covered services.

If the physician does not accept assignment, then the out-of-area patient should be encouraged to file his copy of the EOMB with Blue Shield. The patient should be especially careful to include the numbers in the red arrow on his EOMB.

Covered Services

In all cases, the Reciprocity Program covers the following services on a Usual, Customary or Reasonable basis:

- Surgery
- Anesthesia
- Radiation therapy
- Lab and pathology
- In-hospital diagnostic x-rays, also for accidental injury elsewhere
- In-hospital medical care
- In-hospital care for tuberculosis, mental disorders, drug and alcohol addiction
- Out-patient emergency care
- In-hospital consultation

Reciprocity does not cover services for any procedure not listed above. In addition, the program does not cover: maternity services; dental or nursing care; appliances or supplies of any kind; operations for cosmetic purposes; care received in any governmental facility; or any other care for which the subscriber is not obliged to pay, including occupational ailments or injuries.

The Reciprocity concept was first developed in 1969. With widespread acceptance of Usual, Customary or Reasonable payment by Blue Shield Plans, the problem of out-of-area claim handling became more difficult than under the previous scheduled fee benefits structure. Out-of-area claims initiated a substantial amount of correspondence between the patient, the Plans and physicians.

Continued on Page 126

Necrologies

CLAIR S. BAUMAN, M.D.

1894-1973

Dr. Clair S. Bauman, 79, a pediatrician in Waterville, Maine for many years, died on December 22, 1973 in White Plains, New York, where he was visiting a daughter for the holidays.

He was born in Lock Haven, Pennsylvania on April 11, 1894, son of William Cromer and Annie Glise Bauman.

Dr. Bauman was graduated from Lock Haven High School, Pennsylvania State College in 1918 and received his medical degree from Harvard Medical School in 1922. He practiced in Calcutta, India for one year, Lock Haven from 1925 to 1929, and then located in Waterville.

An honorary member of the Kennebec County Medical Association and the Maine Medical Association, he received a 50-year pin in 1971. Dr. Bauman was also a member of the

American Medical Association, the American Academy of Pediatrics, chairman of the Maine Academy of Pediatrics and was on the Council of the New England Pediatrics Society. For many years, he was public school physician in Waterville, and was a member of the board of the New England Society of Little Wanderers. He was on the staffs of Thayer and Seton hospitals.

Surviving are his wife, Mary Trump Bauman; two daughters, Mrs. Everett Orbeton of South Portland and Mrs. Alfred Gates of White Plains, New York; a son, Dr. Arthur W. Bauman of Rochester, New York; a brother, Dr. Arthur W. Bauman of Delray Beach, Florida; a sister, Mrs. Roy K. Wise of Allentown, Pennsylvania; eleven grandchildren and a great-grandson.

CARL H. STEVENS, M.D.

1885-1974

Dr. Carl H. Stevens, 88, of Lincolnville, Maine, a Past President of the Maine Medical Association, died on January 30th following a long illness.

Born in Northport, Maine on October 18, 1885, he was the son of Mason I. and Emma J. Abbott Stevens.

Dr. Stevens was graduated from the Maine Central Institute, Bowdoin College and received his medical degree from Bowdoin Medical School in 1911.

He was an honorary member of the Waldo County Medical Society and the Maine Medical Association, receiving a 50-

year pin in 1961, a 55-year pin in 1966 and a 60-year pin in 1971. Dr. Stevens served on the Council of the Maine Medical Association from 1938 to 1941, was Council Chairman in 1941, President-elect from 1941 to 1942 and President from 1942 to 1943. He was also a fellow of the American College of Surgeons.

Surviving are a daughter, Mrs. Richard Sullivan of Needham, Massachusetts; six grandchildren and a great-grandchild.

ALLAN WOODCOCK, M.D.

1891-1974

Dr. Allan Woodcock, 82, well-known orthopedic surgeon of Bangor, Maine, and a Past President of the Maine Medical Association, died on January 31st in a local hospital, following a long illness.

He was born in Bangor on May 29, 1891, son of Dr. Galen M. and Elizabeth Christian Woodcock.

A graduate of Bangor High School and Bowdoin College, Dr. Woodcock received his medical degree from Bowdoin Medical School in 1915.

He was an honorary member of the Penobscot County Medical Society and the Maine Medical Association, receiving a 50-year pin in 1965 and a 55-year pin in 1970. Dr. Wood-

cock served on the Council of the Maine Medical Association from 1955 to 1958, was Council Chairman from 1957 to 1958, President-elect from 1958 to 1959 and President from 1959 to 1960. He was also a member of the American Medical Association, the American Academy of Orthopedic Surgeons, the American College of Surgeons and the New England Surgical Society. Dr. Woodcock was an overseer at Bowdoin College and a former member of the Bangor City Council.

Surviving are a daughter, Mrs. Jotham Pierce of Cumberland Foreside; two sons, Judge Allan, Jr. and Dr. John A., both of Bangor; and 19 grandchildren.

ALVIN E. OTTUM, M.D.

1904-1974

Dr. Alvin E. Ottum, 69, Portland, Maine obstetrician and gynecologist for many years, died at his home in Falmouth on February 21st, after a brief illness.

He was born in Pierpont, South Dakota on September 19, 1904, son of Andrew and Eliza Wicker Ottum.

Graduating from the University of Minnesota in 1926, Dr. Ottum received his medical degree from Rush Medical College in 1934. He interned at the St. Louis City Hospital and then located in Portland in 1936. During World War II, Dr. Ottum served with the medical detachment from the Maine General Hospital in the 67th Army General Hospital in Europe.

He was a member of the Cumberland County Medical Society, the Maine Medical Association, the American College of Surgeons and was a board member of that organization.

Surviving are his wife, the former Barbara Bragg; three sons, Alvin E. Ottum, Jr. of Portland, Oregon, John W. Ottum of Scarborough and Eric M. Ottum of Falmouth; two daughters, Mrs. Victoria L. Swendsen of Falmouth and Mrs. Alan J. Arnold of Austin, Texas; three sisters, Mrs. Lillian M. Peterson of Santa Barbara, California, Mrs. Hulda T. Irish of Evanston, Illinois and Mrs. Lorraine Schmidt of McGregor, Minnesota; four grandchildren and several nieces and nephews.

JACOB MELNICK, M.D.

1884-1974

Dr. Jacob Melnick, 89, a long-time Portland, Maine physician, died on February 22nd in a local hospital, after a brief illness.

He was born in Vilno, Lithuania on September 10, 1884, son of Abraham I. and Raechel Lea Shustari Melnick.

Dr. Melnick came to this country as a child and was educated in schools in Dover, New Hampshire and Boston, Massachusetts. In 1913, he received his medical degree from the College of Physicians and Surgeons, Boston. Following his internship at Brockton Hospital, Boston City Hospital, Carney

Hospital, Massachusetts General Hospital and the New York Lying-in Hospital, he located in Portland in 1914.

An honorary member of the Cumberland County Medical Society and the Maine Medical Association, he received a 50-year pin in 1963, a 55-year pin in 1968 and a 60-year pin in 1973. He was also a member of the American Medical Association.

His wife, the former Pauline Shuman, died in 1954, and he is survived by two sons, two granddaughters, four great-grandchildren and several nieces and nephews.

News, Notes and Announcements

Summer Programs at Colby College, 1974

*The medical programs have a little star at the left.

June 15-August 23

*29th Annual Lancaster Course in Ophthalmology

June 18-21

Maine Methodist Conference

June 22

Annual Meeting, Maine Historical Society

July 9-13

*Topics in Clinical Hematology

July 14-18

*Cancer Treatment Seminar

July 15-16

21st Annual Estate Planning and Tax Institute

July 23-26

*4th Annual Seminar in Surgical Techniques

July 27-28

4th Annual Show, Water-Oak Gem and Mineral Society

July 28-31

*5th Annual Seminar in Neurosurgical Techniques

August 4-7

*15th Annual Frederick T. Hill Seminar in Otolaryngology

August 4-8

*11th Annual Industrial Hearing Testing Institute

August 4-10

*22nd Annual Institute in Occupational Hearing Loss

August 11-17

19th Annual Great Books Institute

August 18-24

19th Annual Church Music Institute

August 19-23

*6th Annual Seminar in Nuclear Medicine

August 25-28

*Seminar in Forensic Medicine

August 25-29

*Seminar in Pulmonary Disease

For further information write to:

R. H. KANY

Director of Summer and Special Programs
Colby College

Waterville, Maine 04901

Pulmonary Disease

August 25-29, 1974. First Annual Seminar, Topics in Pulmonary Disease. National faculty including Barry Fanburg, M.D., Thomas Petty, M.D., Gareth M. Green, M.D., and more.

Twenty-one hours of Category I credit available. Colby College/Thayer Hospital, Waterville, Maine.

Inquiries to R. H. Kany, Director, Special Programs, Colby College, Waterville, Maine 04901.

Announcement of Humanities Seminars for Physicians and Other Members of the Health Professors

Ethical conflicts, the rights of patients and practitioners, and similar questions current in health care will be explored by practicing physicians and other health professionals in a new program of seminars funded by the National Endowment for the Humanities. The program, the first of its kind, will bring together for a month of full-time study and discussion medical practitioners and distinguished humanists whose work has focused on problems related to medicine and health care. A grant of \$105,303, to support three separate seminars during the summer and fall of 1974, was announced by Dr. Ronald Berman, Chairman of the Endowment.

Directing the seminars will be Dr. Charles E. Rosenberg of the University of Pennsylvania, Dr. William F. May and Dr. David H. Smith of Indiana University, and Dr. H. Tristram Engelhardt, Jr. of the University of Texas Medical Branch at Galveston.

Focal points for each seminar will be selected issues based on case studied from medical practice which will be examined in their ethical, philosophical, and/or historical contexts. The new program aims to improve the quality of leadership in medicine by broadening the perspective from which physicians and other health practitioners view their profession and society at large. In launching this project the Endowment's premise is that the knowledge and insights unique to the humanities are needed more urgently than ever in the contemporary world, and that they should be made available to present and future leaders of the nation's professions.

Twelve to fifteen participants, from all branches of the health professions, will be chosen for each seminar by the individual directors in consultation with selection committees. Participants will attend tuition free and will receive a \$1,500 stipend for room, board, and transportation. They may be accompanied by members of their families, but no increase in stipend will be allowed.

One seminar will be taught by Dr. Rosenberg, Professor of the History of Medicine and member of the history and medical school faculties at the University of Pennsylvania. Contemporary problems such as psychiatric legitimacy, hospitals, women and medicine, and medical ethics will be explored in the context of the past century. The seminar will run from July 15 to August 9, 1974, at the University of Pennsylvania in Philadel-

phia. The deadline for receipt of applications is May 31, 1974; selections will be announced by June 7.

Participants in a second seminar, to be held on the Williams College Campus in Massachusetts, will examine selected ethical issues in medical practice and their consequences for professional conduct. These will include the doctor-patient relationship, the ethos of the hospital and the claims of society at large. Dr. May, Professor and Chairman of the Department of Religion at Indiana University, will direct the seminar. Associate director will be Dr. Smith, Professor of Social Ethics at Indiana. The seminar will run from July 15 to August 9, 1974; deadline for receipt of applications is May 31, 1974, and selections will be made by June 7.

The focus of the third seminar will be ethics and philosophy in the health-care disciplines. Dr. Engelhardt, a philosopher and physician who is Professor of the Philosophy of Medicine at the University of Texas Medical Branch at Galveston, will direct a case-oriented review of the areas of current ethical controversy in medicine. He will attempt to relate such issues as rights and duties of patients and practitioners and concepts such as the quality of life and human dignity, to decision-making in medical practice. The seminar will be held on the Galveston campus and will run from September 9 through October 4, 1974. Deadline for receipt of applications is June 17, 1974; selections will be announced by July 1.

All requests for information and applications should be addressed to the individual seminar directors as follows: Professor H. Tristram Engelhardt, Jr., Institute for the Medical Humanities, University of Texas Medical Branch, Galveston, Texas 77550; (713) 765-2376; Professor William F. May, Chairman, Department of Religious Studies, Sycamore Hall 230, Indiana University, Bloomington, Indiana 47401, (812) 337-3531; Professor Charles E. Rosenberg, Department of History, University of Pennsylvania, Philadelphia, Pennsylvania 19174, (215) 594-8452 or 8453.

Aspen Mushroom Conference

The Aspen Mushroom Conference is designed for physicians, scientists and amateur mycologists interested in the identification and toxic properties of mushrooms. The Conference is sponsored by the Beth Israel Hospital, Denver and the Colorado Mountain College, Glenwood Springs, Colorado and will be held at the Inns of Court, Snowmass-at-Aspen, Colorado, August 26-30, 1974.

An outstanding group of Colorado and visiting mycologists and physicians will serve as a faculty for the Conference. Didactic sessions and refresher courses on mushroom identification will be held in the early mornings and late afternoons at the novice and advanced student levels. Group discussions on advances in the diagnosis and treatment of mushroom poisoning will be offered to physicians and others interested in this subject. Generally, in the late summer, the Snowmass mountains are richly productive of a wide variety of mushrooms. Experienced leaders will conduct daily forays into the surrounding mountains to collect edible and poisonous species and study their field characteristics.

For further information contact: Aspen Mushroom Conference, Beth Israel Hospital, W. 17th Ave. & Lowell Blvd., Denver, Colorado 80204, 1-303-825-2190.

Workshop on the Surgery of Chronic Ear Disease

The Department of Otolaryngology of the University of Illinois, Abraham Lincoln School of Medicine, is pleased to announce a Workshop on the Surgery of Chronic Ear Disease to be held October 2 through 4, 1974.

The workshop will deal with canal preservation in surgery for cholesteatoma. The technic of canal preservation will be taught by closed circuit surgical color television and temporal bone dissection. Seminars will be held to discuss the difficulties and complications of these techniques.

Under the direction of David F. Austin, M.D., the faculty is

composed of an international group of clinicians.

Registration includes all materials, lunches and transportation about the city, and is limited to 50.

Interested registrants may write directly to the Department of Otolaryngology, University of Illinois Hospital Eye and Ear Infirmary, 1855 West Taylor Street, Chicago, Illinois 60612.

Annual Otolaryngologic Assembly

The Annual Otolaryngologic Assembly of 1974 will be held October 26 through November 1, 1974, in the Eye and Ear Infirmary of the University of Illinois Hospital. The Department of Otolaryngology of the Abraham Lincoln School of Medicine, University of Illinois at the Medical Center, offers a condensed basic and clinical program for practicing otolaryngologists under the direction of Emanuel M. Skolnik, M.D., with Burton J. Soboroff, M.D., as co-chairman. This program is designed to bring to specialists current information in medical and surgical otorhinolaryngology.

Interested otolaryngologists should direct their inquiries to the mailing address: Otolaryngology, P.O. Box 6998, Chicago, Ill. 60680.

A separate, but correlated course, "Conference on Radiology in Otolaryngology and Ophthalmology" will be held this year on Friday and Saturday, November 29 and 30, under the guidance of Galdino E. Valvassori, M.D. For further information about the radiology conference, write to Professor Valvassori, Radiology Department, Abraham Lincoln School of Medicine, P.O. Box 6998, Chicago, Ill. 60680.

Notice of Workshops on Federal Diagnostic X-Ray Standard

A Federal standard for diagnostic x-ray equipment becomes effective August 1 of this year. This equipment standard primarily applies to manufacturers and assemblers but users are also affected.

Because the final standard was extensively revised and amended since first proposed in 1971, it is not surprising that many individuals affected are not yet knowledgeable about its full implications.

Under the standard, x-ray manufacturers are responsible for producing equipment and components that perform according to requirements of the standard. Assembler's primary responsibility is to install the system according to the manufacturer's specifications and to use the type of components called for by the standard. He must certify that these two conditions have been met by filing specified forms with the Food and Drug Administration's Bureau of Radiological Health, the State Radiation Control Agency, and the purchaser.

One of the principal protection provisions of the standard requires machines to be capable of restricting the x-ray beam to the size of the film or fluoroscopic image receptor. The standard also contains provisions intended to make it possible for operators to reproduce more consistently a given image quality for given voltage, current, and time settings. This capability, in combination with good x-ray examination techniques, will tend to minimize film retakes and unnecessary exposure.

To familiarize persons who are affected by the new standard, especially commercial installers and users who may perform their own installations, with their responsibilities under the new regulations, workshops are being conducted by the Food and Drug Administration. These one-day sessions are being held in various parts of the U.S. Persons interested in attending are urged to contact the FDA Radiation Control Officer in their region for additional information. Workshops will also include discussions of proposed Federal requirements involving resale of used x-ray equipment.

For further information contact: Joseph Arnaudo, Region I, (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), 585 Commercial Street, Boston, Massachusetts 02109, Telephone: 617-223-5859.

County Society Notes

YORK

The annual meeting of the York County Medical Society and its Auxiliary was held at the Officers Club, U.S. Naval Shipyard, Kittery, Maine on January 9, 1974. This meeting was highlighted by the re-election of Dr. Carl E. Richards of Sanford and Alfred, to the Presidency and also to his 32nd term as a delegate to the Maine Medical Association.

The program was as follows:

6:30 to 7:30 p.m. — Social Hour

7:30 to 9:00 p.m. — Dinner

Speaker: Dr. Paul A. Fichtner, President, Maine Medical Association

Subject: "PSRO"

Separate Business Meetings followed.

There were approximately 40 physicians, wives and guests that attended.

The annual business meeting of the York County Medical Society was presided over by Dr. Carl E. Richards. Included in the business meeting was the election of the following officers and committees:

President: Dr. Carl E. Richards, Sanford

Vice-President: Dr. Irvin Dorfman, Sanford

Secretary-Treasurer: Dr. Melvin Bacon, Sanford

Executive Committee (to include above officers): Drs. Robert

S. LaFond, Saco and Walter R. Peterlein, Jr., Springvale

Delegates to the M.M.A. House of Delegates: Drs. Carl E.

Richards, Badi M. Haq, Biddeford and S. Dunton Drum-

mond, Bar Mills. Alternates: Drs. Owen O. Dow, Kenne-

bunk, Maurice Ross, Saco and Alexander W. Magocsi,

York

Censor Committee: Drs. Marion K. Moulton, West New-

field, Chairman, Roger J. P. Robert, and Paul S. Hill, Jr.,

both of Saco

Peer Review Committee: Drs. Kenneth E. Leigh, York,

Chairman, Conner M. Moore, Saco and Melvin Bacon

Nominating Committee for 1975: Drs. Andre P. Fortier and

Marcel P. Houle, both of Biddeford and Melvin Bacon

The program for the meetings of the York County Medical Society for the coming year is as follows:

March 13, 1973 — Goodall Hospital, Sanford, Maine (Dr. Richards and Bacon in charge)

May 8, 1974 — Webber Hospital, Biddeford, Maine

October 9, 1974 — York Hospital, York, Maine

January 8, 1975 — Annual Meeting (Kennebunk Inn or San-

ford Town Club)

Captain John Stover, Commandant of the U.S. Naval Hospital, Kittery, was elected as a service member to the York County Medical Society.

It was also unanimously voted that the York County Medical Society carry on an extensive public relations program. This is to include a column in each of the York County newspapers entitled, "The York County Medical Society Speaks." Physician members of the county will participate by inserting periodic articles for this column.

The meeting adjourned at 10:35 p.m.

MELVIN BACON, M.D., *Secretary*

LINCOLN-SAGADAHOC

The regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at the Ledges in Wiscasset, Maine on February 19, 1974.

The meeting was called to order at 8:35 p.m. by the President, Dr. Peter A. Evans. The minutes of the January meeting were read by the secretary and accepted as read.

Old Business: The letters sent to Senator Muskie and Representative Kyros were discussed, and one will be sent to Senator Hathaway.

Correspondence: Dr. Evans read a synopsis of a report of legislation pending and passed in Augusta.

Dr. David W. Schall outlined some problems posed physicians and hospitals by laws relating to public alcoholism which will become effective in July. The situation was discussed at length. Dr. Schall moved and Dr. Richard Evans, III seconded, that this Society write all applicable State legislators that the law declaring public drunkenness no longer a crime should be re-studied and that its implementation should be postponed until after the Department of Health and Welfare has considered the problem, and issued guidelines for handling the care of the person suffering from acute alcoholic intoxication, and determining facilities and funding for such care; the letter to include a description of the havoc to be caused by implementation of the current law. The motion was passed.

Dr. Robert S. Galen introduced the speaker, Mrs. Shirley Lewis, a librarian at Regional Memorial Hospital, who spoke on "The Health Science Library: Past, Present, and Future."

The meeting was adjourned at 10:00 p.m.

GEORGE W. BOSTWICK, M.D., *Secretary*

Letters to the Editor

To the Editor:

As a follow-up to our previous conversations and for the general information of your membership, the following is a brief discussion of a study of maternal and child health in Maine being conducted by the Bureau of Health, Maine Department of Health and Welfare.

Background

The Maine Medical Center, Portland, has a nurse midwife service supported by Maine's Regional Medical Program. A nurse midwife internship program and potentially a nurse midwife education program are being considered by Maine Medical Center. The purpose of our study is to look at maternal and child health in Maine and make recommendations about the advisability and feasibility of training nurse midwives for use in Maine.

Method

The Johns Hopkins University, School of Hygiene and Pub-

lic Health, is funded by a grant from the Bureau of Health to study this problem. The approach will be two-fold. First, existing data will be analyzed to determine:

- . . . Demographic profile of Maine residents
 - . . . Characterization of the target population
 - . . . Resources to deliver maternal health care services
- and secondly, a survey questionnaire will be employed to obtain data pertinent to:
- . . . patterns of resource utilization
 - . . . perceived needs for care
 - . . . attitudes towards alternative approaches to care

Trends will be noted and we will attempt to project these indicators to 1980.

Expected Results:

We all should gain a clear perspective of where we are now by summarizing all current information and collecting and summarizing attitudes and opinions. The introduction of nurse

midwives into the obstetrical services at the Maine Medical Center may be an indication of a general need across the State or may reflect only the special needs of one facility.

We look forward to the cooperation of the membership of the Maine and county medical associations in this effort and will use the vehicle of *The Journal of the Maine Medical Association* to report our results. A detailed study plan is available from the Bureau of Health and will be sent to interested individuals upon request.

PETER J. LEADLEY, M.D.
Director of Health
JOHN NORTON
Manager
Research, Evaluation and Planning
Bureau of Health
State of Maine
Department of Health and Welfare
Augusta, Maine 04330

To the Editor:

This is to inform you that the Maine Medical Center Emergency Division has now taken over the function of Poison Control for the State of Maine. Physicians or patients having questions relevant to accidental or excessive ingestion of toxic substances may call 871-2381 for assistance or information.

I thought that I might pass this information along to you in hopes that we could inform the proper persons through *The Journal of the Maine Medical Association*.

FRANK H. LAWRENCE, M.D.
Director, Emergency Division
Maine Medical Center
Portland, Maine 04102

To the Editor:

I am currently editing a book on the personal testimonies of Christian physicians and how they view the current medical-ethical issues of today, i.e., abortion, euthanasia, organ transplants, when is a person officially dead, sterilization, psychosurgery, semen donors, ovum donors, host mothers, reversed aging, artificial organs, genetic counseling, etc. I would be interested in hearing from any Christian physician who would be interested in contributing to such a book or who would be able to suggest a Christian physician to write for this book. Please contact me at the following address:

CLAUDE A. FRAZIER, M.D.
4-C Doctors' Park
Asheville, N.C. 28801

To the Editor:

The U.S. Air Force has a continuing need for physicians to serve at active Air Force medical facilities. Appointment to one of these positions includes a commission in the grade of Captain or higher, depending upon experience and education and many military fringe benefits. Physicians enjoy professional pay, continuation pay, and accelerated promotions in addition to regular military entitlements.

Another major benefit is the availability of specialty training on active duty. Approved residency programs exist for most specialties, and qualified applicants may attend under Air Force sponsorship at full pay and allowance. These programs are generally available only to physicians on active duty, except that civilian physicians may enter directly into the programs in Aerospace Medicine and Family Practice.

Another significant benefit is the military retirement program, which provides for retirement at half pay after 20 years of service and an additional 2.5% for each year beyond 20. All periods of active duty count toward retirement. The mandatory retirement age is 60.

Placement for fully qualified GP's or specialists is possible at almost any Air Force facility requiring the applicant's specialty.

The facilities located in the New England and New York areas are:

Base	Location	Type Facility	Nr. Beds
Loring AFB	Presque Isle, ME	Hospital	35
Pease AFB	Portsmouth, NH	Hospital*	75
Plattsburgh AFB	Plattsburgh, NY	Hospital	50
Griffiss AFB	Rome, NY	Hospital	35
Hancock Field	Syracuse, NY	O/P Clinic	
L G Hanscom Fld	Bedford, MA	O/P Clinic	

*Now under construction, to open in September 1974.

Of course, there are many other Air Force medical facilities in other areas of the country and overseas.

In addition to the usual professional requirements, applicants must be able to pass an Air Force commissioning physical examination and sign an agreement to serve two years on active duty. This contract may be extended with the concurrence of both parties. Applicants who can complete 20 years of service before age 60 qualify for the military retirement program.

I will be glad to explain our programs in greater detail to you or directly to any interested physicians. My phone number is (617)-861-4352 or 4353.

J. W. CHRISTEN, Capt., USAF MSC
Chief, New England Medical Recruiting

NEWS FROM BLUE CROSS AND BLUE SHIELD

Continued from Page 121

By the fall of 1970, a permanent Reciprocity System had been devised to accomplish two primary goals: guarantee the physician of his Usual, Customary or Reasonable fee for covered services in advance of the customary eligibility check; and provide the subscriber coverage out of his Plan area on the same basis as that he would receive at home.

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Basal Cell Carcinoma of the Vulva

A Report of Six Cases and Review of the Literature

JOHN ZERNER, M.D., F.A.C.O.G.*

Basal cell carcinoma, while being most common of cutaneous neoplasms,³ may rarely be found on the vulva where it accounts for less than three percent of all vulvar malignancies.^{2,7,9,10} Furthermore, vulvar carcinoma is, in general, one of the less frequent female genital tumors.⁴ Considering the rarity of basal cell carcinoma of the vulva^{1,11} and its occurrence in the elderly patient, reticent to seek medical care, diagnosis is often delayed⁶ and therapy incomplete and inadequate.

This communication represents six new cases of the disease seen at the Mercy Hospital and the Maine Medical Center over the past fifteen years (1958-1972).

CASE REPORTS

Case 1. — Case History: A 71-year-old female found to have a one inch lesion of the right labia majora for an unknown length of time. Chief complaint was of "continual drainage." Surgery: Local excision was performed. Pathologic Report: Basal cell carcinoma of the right labia majora with inadequate margins. Patient living and well five years later; no evidence of recurrence.

Case 2. — Case History: A 73-year-old with a six month history of pruritus and dysuria was noted to have a superficial ulcer in the area of the right labia minora (size not mentioned). Surgery: An office biopsy showed basal cell carcinoma. The lesion was then totally excised without incident. Pathologic Report: Basal cell carcinoma, adequate margins. Patient living and free of disease three years later.

Case 3. — Case History: A 62-year-old noted to have a nodule located to the right of the clitoris, measuring approximately 3-4 cm. in diameter; described as having sharply defined raised edges with a central crater (Fig. 1). This had been present for 9 months. Pre-operative diagnosis: R/O vulvar carcinoma. Surgery: The lesion was excised completely.

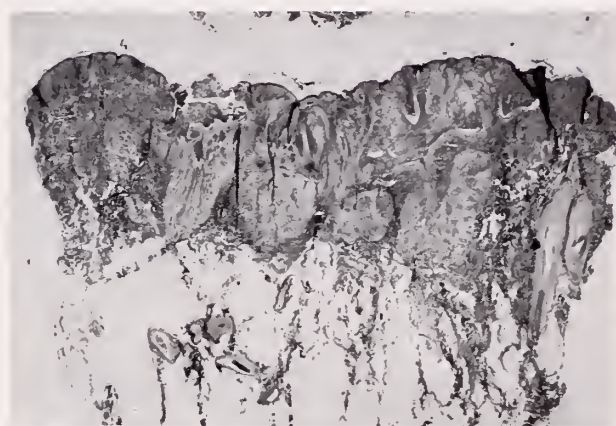


Fig. 1. Lesion under low power cross section of case #3, characteristic of "rodent type" basal cell carcinoma. Note raised edges with central rodent crater.

Pathologic Report: Basal cell carcinoma, adequate margins. Patient free of disease for 2 years.

Case 4. — Case History: An 80-year-old presented with complaint of a painful recurrent cyst of the right vulva noted by several physicians over the preceding 5 years. Description was that of an inflamed cyst of right vulva, the size of a "small marble." Pre-operative diagnosis: Sebaceous cyst, right vulva. Surgery: Patient underwent surgery with excision of the mass. Pathologic diagnosis: Basal cell carcinoma of vulva with adequate margins. This patient is alive and without sign of recurrence 3 years later.

Case 5. — Case History: A 78-year-old presented with a punched out ulcerated lesion of the left labia measuring 2 cm in diameter. No history available as to length of time lesion had been noted. Pre-operative diagnosis: Not listed. Surgery: Surgery performed uneventfully. Pathologic diagnosis: Basal cell carcinoma of left vulva with good margins. The patient expired 6 years later of unrelated causes.

Case 6. — Case History: A 92-year-old presented with large 5 cm x 3 cm lesion of left labia minora (Fig. 2). She had noted spotting with dysuria and perineal irritation over preceding six months. This patient is most interesting in that in 1956,

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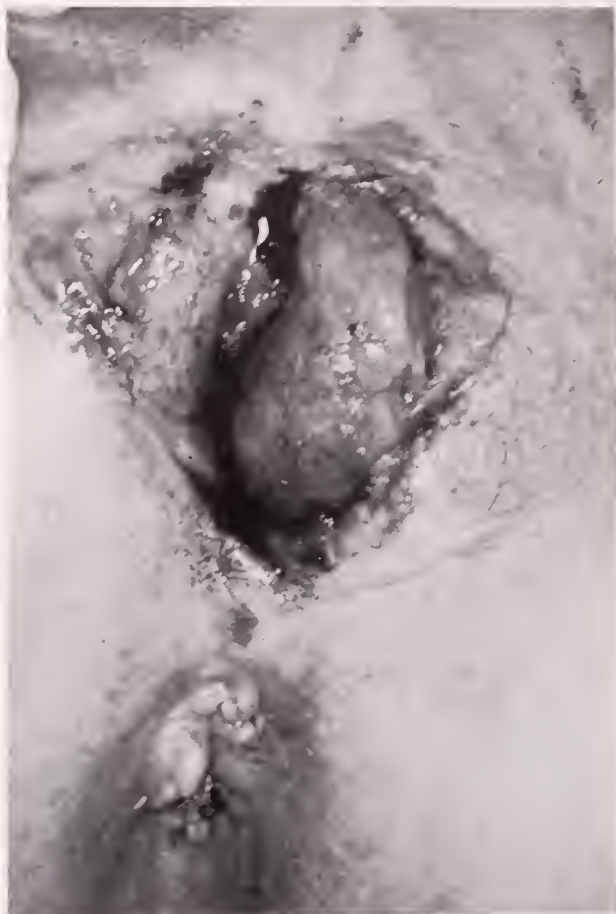


Fig. 2. Gross appearance of Case #6. Large 3cm x 5cm lesion involving almost the entire Left Labia minora.

aged 75, she was found to have a basal cell carcinoma of the left labia minora which was excised completely and apparently with adequate margins. In 1965, this lady, now 84, was noted to have a 3 cm x 2 cm ulcerated lesion superior to the location of the initial tumor. Surgery was performed, with adequate margins obtained. Pathologic diagnosis: Basal cell carcinoma of vulva. She was then lost to follow-up until her present admission 8 years later. Biopsy showed a similar lesion and the patient was admitted. Surgery: Partial vulvectomy with total excision attempted. Pathologic diagnosis: Basal cell carcinoma with adequate margins. The patient is alive and with no evidence of recurrence 9 months later; further therapy held as patient's mental status is rapidly deteriorating.

Clinical

The ages varied from 62 to 80 years, with a mean of 73 years. All patients were Caucasian. The duration of symptoms ranged from 6 months to 5 years but with no available history in two patients. Patient delay in seeking medical attention was present to a degree in all cases. The most common complaint was a mass associated with a variety of symptoms: pain, pruritus, dysuria, or spotting. The lesions were described as anywhere from "button sized" to 3 cm x 5 cm; no exact description was available in the majority of

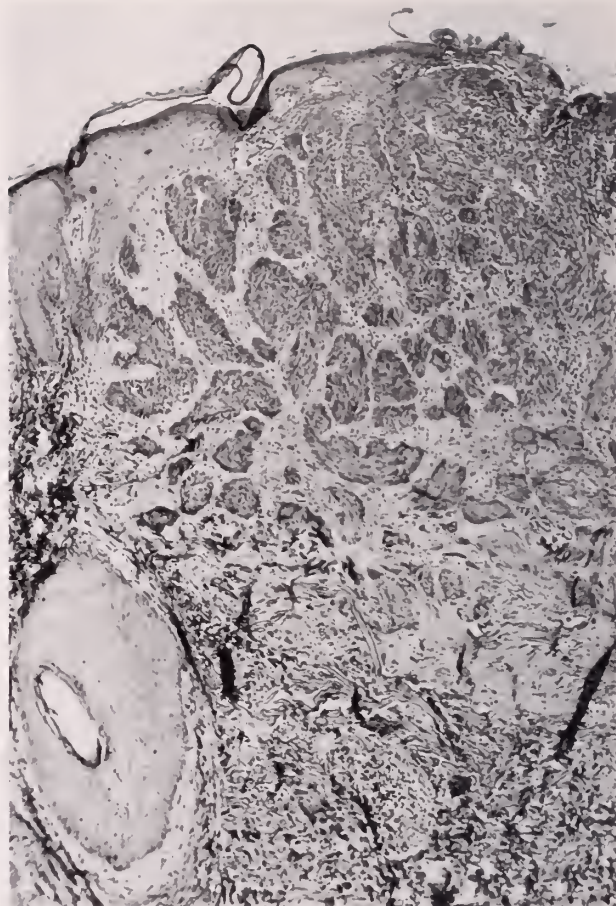


Fig. 3. Photomicrograph (low power) of case #3 showing typical palisading with brush border pattern at margin of tumor.

cases.^{4,6} A specific location could be identified from the summaries in all but 2 cases: two of the labia majora and one each of the labia minora and clitoris.

Treatment

In all cases surgical total excision was the initial mode of therapy. However, only four of six primary lesions had adequate margins as seen by microscopic exam. Interestingly, neither of the two cases showing inadequate margins (#1 and #2) have shown any recurrence while a patient (#6) apparently having adequate initial therapy, has had recurrence twice in essentially the same area.

Pathology

Grossly, two varieties are noted. The first, the "rodent ulcer," demonstrates sharply demarcated raised edges with central ulceration while the second is a superficial lesion appearing as an erythematous raised area with or without ulceration. Microscopically individual cells were large with scant cytoplasm but with large elongated

nuclei, tending to pulsate at the margins, creating a brush border appearance (Fig. 3). Inflammation was present in the adjacent connective tissue and in areas of ulceration.

DISCUSSION

Little attention has been given to vulvar basal cell carcinoma. Authors have often omitted the lesion from classification of vulvar malignancy,¹ yet it occurs with enough frequency to warrant special attention.¹³ It is estimated that squamous cell carcinoma will account for 95% of vulvar malignancy, malignant melanoma for 2-3 percent, and basal cell carcinoma about the same.^{5,6,8,10} However, it is not possible to accurately number the cases of basal cell tumors. As mentioned by Palladino,⁹ 150 cases were listed in the world literature through 1968 but many are merely tabulated in large series describing all types of vulvar cancer. Date analysis was possible only in 65 cases, to which this series of 6 is added.

The lesion is more common in Caucasians than in the Black.¹² Syphilis, Arsenicals, and previous irradiation of the vulvar area have been occasionally suggested as possible antecedent factors in the development of basal cell carcinoma but there seems to be no association recognizable at present.^{2,7} The known relationship of leukoplakia and squamous cell carcinomas does not seem to exist with basal cell carcinoma.

A mass of variable size and often associated with dysuria, pruritus, and bleeding is most commonly noted.^{2,7} The lesion has been described to occur mainly in the labia majora but also on the labia minora and clitoris.^{2,7,9}

Location	Palladino <i>et al</i> ⁹	Present Series	Total by Location
L. majora	46	2	48
L. minora	4	1	5
L. maj. & min.	5		5
Clitoris	4	1	5
Other/Unlisted	6	2	8

Most importantly many authors state that evaluation will be difficult unless a careful description of the size and location of the tumor is given. This has not been the case to date.

The advanced age of patients, averaging between 58 years and 64 years, depending on the series quoted^{2,7,10} contributes heavily to the delay in seeking care either because of patient hesitancy obtaining medical attention or in physician delay initiating therapy.⁷ Symptoms are often found to have been present for years.

Therapy must be such as to obtain complete removal of malignant tissue, preferably by wide local excision.^{3,11} Nonsurgical modalities, i.e., radiother-

apy or electrocauterization should be reserved only for those in such extremely poor medical condition that any procedure would be life threatening. There is no need of radical surgery as, to date no case of metastatic disease¹¹ or death attributable directly to this lesion has been documented.^{3,9}

However, serial histologic sections are necessary to rule out the rare squamous cell in situ or invasive carcinoma possibly coexisting with the basal cell lesion. Should this prove to be the case, more extensive therapy is required.

Recurrence is estimated to occur anywhere between five⁴ and fifteen percent.⁹ Again, analysis is difficult due to poor follow-up and to the scant number of cases reported over forty years. Since vulvar basal cell carcinoma may be considered a multicentric lesion,⁷ recurrence often may be expected about the area of original excision.

CONCLUSION

Vulvar basal cell carcinoma is a relatively rare lesion seen in the elderly female. Because of advanced age, treatment is often delayed both by the patient and physician. Symptomatology may be variable but usually discharge, pruritis, bleeding, and a labial mass are noted.¹³ This is a localized disease, curable by wide surgical excision. Since recurrence is likely in at least five percent, long term follow-up becomes mandatory, as with any carcinoma.

A more accurate description of the lesion is to be encouraged.

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Hemodialysis in the Acute General Hospital

Duplication — Obligation

WILLIAM H. AUSTIN, M.D.* and JEANETTE IVES, R.N.**

In the past two decades, hemodialysis has undergone tremendous changes in both philosophy and practice. Our initial experience in the late '50s was in a large metropolitan area with many millions of people, where only three artificial kidneys were available. At that time, dialysis was looked upon as a medical curiosity, and as radical treatment for renal failure and drug overdose. Since that time, particularly in the last few years, vast improvements have been made in dialysis technique. They were, in large measure, due to the advent of chronic dialysis; however, at the present time acute hemodialysis is, and should be, available to most hospitals with bed capacities of about 150 and over. This concept was confirmed through a personal survey at a recent meeting of the American Association for Artificial Internal Organs.

Dialysis has now reached a point in its development where it is becoming to a large extent a nursing function. Qualified physicians are, of course, necessary to supervise dialysis; however, the operation of artificial kidneys is well within the scope of a well-trained nurse.

Unfortunately the areas of acute and chronic dialysis have been misunderstood by physicians, comprehensive medical health groups, third-party carriers and the public in general. There has been much written about duplication of facilities for dialysis. Most of the objections apply only in the area of chronic dialysis, but have carried over into the area of acute dialysis. It is no more inconceivable to have an artificial kidney in one of each "medium-sized" hospital, even in adjacent areas, than it is to have respirators, nuclear medicine diagnostic equipment, or even expensive blood-gas analyzers. There seems to be no objection for medium and small hospitals to carry on peritoneal dialysis, whereas hemodialysis in smaller hospitals is often frowned upon. Cost analyses have shown¹ that there is very little difference cost-wise, and actually in our experience the actual implements of dialysis, excluding the initial outlay for the machine, are approximately one-quarter the amount required for peritoneal dialysis.

This report is a summary of a year's experience in hemodialysis in a "medium-sized" hospital. We believe that it demonstrates that where one or two trained physicians are available, nursing services

and special-care facilities can adequately handle patients with acute renal failure, drug overdose and even subacute problems of renal insufficiency. We believe that this demonstrates that the quality of care may be excellent and, at the same time, obviate the necessity of transporting acutely-ill patients from one institution to another for the performance of a type of treatment which can now adequately be carried out by competent nursing personnel.

Three brief case studies are outlined, which deal with (a.) a patient in acute renal failure; (b.) a patient with drug overdose; and (c.) a patient with chronic, stable renal insufficiency who becomes decompensated because of superimposed illness. These reports attest to the facility with which these measures can be accomplished, and hopefully will encourage "medium-sized" hospitals to consider the use of hemodialysis. It is also a direct rebuttal to those who cry "duplication." We feel that this group falls into the category of individuals described by Harriet Beecher Stowe as those who are "— inflexibly bound to time-honored inconveniences."²

Fourteen dialyses were performed during a twelve-month period of active operation; — half coming within the last three months. This is consistent with the experience in other acute general hospitals for the first year of operation.^{3,4} Utilization usually levels off at approximately twenty to forty dialyses per year.^{4,5,6} This constitutes justification for in-hospital maintenance of hemodialysis.

CASE REPORTS

Case #1 — Acute Renal Failure

This is the case of a 69-year-old white male admitted to the hospital because of benign prostatic hypertrophy for a T.U.R. Preoperative physical examination and laboratory studies were unremarkable, and the BUN was 20 mgm%. He underwent a T.U.R. using distilled sterile water as the irrigant. During the immediate eight-hour postoperative period, the urine output was 250 ml. By the second postoperative day, the patient's urinary output had fallen to 400 ml per 24 hours, and the BUN had risen to 130 mgm%, with a normal Potassium of 4.0 mEq/L. The serum Creatinine was 6.0 mgm%. Three days following the operation, peritoneal dialysis was initiated with 1.5% Dianeal† solution, and was terminated on the sixth postoperative day, after thirty-six exchanges. By this time, the BUN had fallen to 66 mgm%. Following peritoneal dialysis, the urine output picked up to approximately 1000 ml per 24 hours. However, the BUN rose to a level of 125 mgm% on the fourteenth postoperative day. The patient's clinical condition had deteriorated, and he showed signs of twitching, mental confusion, nausea, vomiting and a diminishing urine output to 500 ml per 24 hours. Hemodialysis was initiated

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with a Travenol RSP kidney, using a standard 120 Liter bath. Dialysis was performed through tapered catheters inserted through veins in the groin, one extending high, the other low, near the bifurcation of the vena cava. Following a five-hour dialysis, the BUN fell to 28 mgm% and the Creatinine to 2.8 mgm%. A second hemodialysis was performed three days later, and subsequent to this there was progressive clinical improvement with increasing urine output and falling BUN. By the twenty-second day after the second dialysis, the BUN had dropped to 28 mgm% and the Creatinine to 2.5 mgm%. During this period of time, there were no drastic alterations in serum Potassium, CO₂ or other electrolytes, which were not controlled by glucose, insulin and bicarbonate administration. Following clinical improvement, the patient was discharged forty-one days following admission, and was seen as an outpatient approximately one month later, at which time the serum Creatinine was 1.2 mgm% and the BUN was 16 mgm%, all in association with a normal hemogram and chemistry profile.

COMMENT: This patient developed acute tubular necrosis following a T.U.R. His clinical condition deteriorated to the point where he became hypotensive, confused, semicomatose, and had atrial irritability with atrial fibrillation and appeared acutely ill. It is noteworthy that the patient responded poorly to peritoneal dialysis; however, following hemodialysis he showed clinical and chemical improvement, with subsequent return to his normal preoperative state. This case is significant in that it was the first dialysis performed in this hospital. It was undertaken in the Intensive Care Unit, and the dialysis was supervised by nursing personnel who had no previous experience with hemodialysis. It is noteworthy that there were no complications during the course of either dialysis.

Case #2 – Drug Overdose

This is the case of a 43-year-old white female with a past history of compensated chronic liver disease. She became despondent and ingested more than nine grams of Methpyrrolon. Immediately after ingesting this dose of sedative, she drank an undetermined quantity of alcohol and called her physician. The local rescue unit entered her residence and took her to a small hospital where gastric lavage was performed. She was subsequently transferred to this hospital. On admission she was comatose, her pupils were dilated and fixed, blood pressure was 80/40, pulse rate was 48 and respirations were four per minute. Arterial blood gases showed a PO₂ of 53 and a pH of 7.24. During transit, the patient had an undetermined number of seizures. Additional findings included the loss of corneal reflexes and deep tendon reflexes. There was no response to painful stimuli. Vaso-pressors were of little effect in supporting her blood pressure. She was intubated and ventilated with a Bennett-PR2. In view of the fact that the patient was known to have ingested one and one-half times the lethal dose of Methpyrrolon⁷ plus an unknown quantity of alcohol and other undetermined drugs, hemodialysis was initiated promptly in the manner described in Case #1. Standard dialysis with a Travenol RSP kidney with a 120 Liter bath was initiated. After 4½ hours of hemodialysis, the patient began to be able to trigger the respirator. Her tidal volume, however, was less than 200 cc at a rate of 12 per minute. Six hours after the initiation of dialysis, the patient began to show spontaneous movements, became agitated and, by the following morning was fully reactive. The patient showed continued improvement and was alert and ambulated within 24 hours of her overdose. Other aspects of her history, physical and laboratory data do not contribute to the significance of this case study.

COMMENT: Methpyrrolon* toxicity is characterized by coma, apnea and "disproportionately severe hypotension."⁸ Since less than three percent of the drug is excreted in the urine after overdose, the renal clearance by forced diuresis is insignificant.⁹ Previous experience⁷ has shown dramatic clinical improvement following hemodialysis, as in this case. Of note is the fact that recommendation for dialysis is made when a dose of greater than six grams of this drug is ingested.⁷

Previous experience has also shown that a patient ingesting this dose of Methpyrrolon rarely survives and, as noted, response

to hemodialysis was dramatic. This was the case in this particular instance, and even had the patient survived with solely supportive measures, a long period of coma was avoided and the patient was returned to her previous state within twenty-four hours.

Case #3 – Decompensated Chronic Renal Insufficiency

This 74-year-old patient was admitted to the hospital with abdominal pain of eighteen hours' duration. The pain subsequently localized in the right upper quadrant and was associated with nausea, vomiting and radiation of the pain into the right back. Admission examination revealed an elderly lady who appeared acutely ill, with no evidence of jaundice. She had tenderness in the right upper quadrant; however, no masses were felt. Her initial laboratory studies showed a white count of 17,000. The BUN on admission was 31 mgm% with a Creatinine of 2.1 mgm%. The BUN rose to 48 and the Creatinine to 2.8 within the first thirty-six hours. The patient's output remained under 500 cc per day during the first thirty-six hours of hospitalization. Her Sodium was 120 and Potassium was 2.4 despite the falling urine output, and subsequent to the administration of Furosemide. Over the first ten days of admission her output remained low, and her BUN rose to 85 mgm%. At this time it was felt that the patient had gallbladder disease, and she underwent a cholecystectomy, at which time an acutely inflamed gallbladder was found. Postoperatively her BUN continued to climb to a level of 95 mgm% with a Creatinine of 9.1 mgm%. By the third post-operative day, her clinical condition had deteriorated and hemodialysis was undertaken in the fashion described in the previous cases. Her BUN fell to 25 mgm% and clinical improvement ensued over the following forty-eight hours. However, her urine output had continued to remain below 500 cc per day, and her BUN climbed to 148 with a Creatinine of 9.6. It was during this period of time that the patient had gastrointestinal bleeding, requiring transfusion. A second dialysis was undertaken, with a drop in the BUN to 27 mgm%. As before, she showed marked clinical improvement, and over the following fourteen days showed a gradual increase in urine output, entering the diuretic phase with urine volumes of 2000 cc. Supportive measures, which included antibiotics, intravenous fluids and diuretics were continued, and the patient was discharged on the 45th hospital day, after an uneventful recovery. At this time, her BUN was approximately equivalent to her admission value of 39 mgm% with a Creatinine of 2.5 mgm%. Subsequent follow-up studies revealed that the patient continued to have a mild azotemia; however, her post-hospital course remained uneventful, and she returned to her previous daily activities.

COMMENT: This is the case of an elderly lady with probable pre-existing renal disease, with a super-imposed acute abdominal catastrophe of cholecystitis. Her renal disease was aggravated by her acute process and renal insufficiency developed. Although her surgical problem was corrected, she almost succumbed to the acute accentuation of the renal disease. This is an example of a patient with stable chronic disease who could be returned to useful life through the means of supportive therapy with the artificial kidney following acute abdominal catastrophe. Without supportive dialysis, this patient would have died, not from her primary illness, but from complications of her low-grade underlying renal disease.

DISCUSSION

These three cases illustrate some of the most common situations in which hemodialysis is required. In the patient with acute renal failure, the indications for dialysis are not always clear-cut, and some degree of judgement and experience is required. Any knowledgeable physician can gain a great deal of experience relative to this matter in any of a number of dialysis centers within a short period of time. Several articles^{10,11} do give some "cook-

book" type of approaches to the indications for dialysis. These include such matters as hyperkalemia, severe acidosis, a BUN rising at the rate of 20 mgm per day or better, and, most importantly, the changing condition of the patient. In general, it is true that traumatic and catastrophic events leading to renal shutdown necessitate the need for early and frequent dialysis. The well-muscled male who goes into renal failure following an automobile accident may show signs of uremia much more quickly than the elderly, frail patient who has tubular necrosis as a result of shock. Timing does require some judgement; however, we are fortunate to have enough individuals in this State who can offer advice relative to the timing and frequency of dialysis until a new nephrologist feels comfortable in making these decisions for himself.

The second case, in which the patient had taken a massive overdose of a lethal drug, presents a more clear-cut picture. There are those¹² who say that those patients with overdoses should be managed with supportive therapy. They quote their high recovery statistics; however, it is interesting that they fail to mention the high morbidity⁷ due to complications such as pneumonia which occurs after long periods of coma. Starzynski et al¹³ has indicated that judicious use of dialysis in overdose patients in a series of 1700 patients resulted in a mortality of zero. We^{4,7} and others have maintained that knowledge of lethal overdose ingested, a falling blood pressure requiring vasoconstrictors, and apnea requiring artificial ventilation, and deepening coma constitute an irrevocable indication for dialysis. Our personal experience with well over a hundred patients has indicated this to be the case.¹⁴ In only one instance, when we failed to heed our criteria, did the patient succumb. Schreiner's excellent review article, occurring annually in the *Transactions of the American Society of Artificial Organs*, entitled *Dialyzable Poisons*, offers one of the finest guidelines for dialysis in poison cases.⁷ He and others¹⁵ point out the fact that some drugs, such as Glutethimide and Noludar, constitute a greater hazard than some of the more commonly used agents. Because of the unique metabolic handling of Glutethimide by the body, maximal blood levels may not be reached for many hours, and we have observed patients to progress from an alert state to shock and death in thirty minutes. Most of those who have had considerable experience with overdoses of this nature recognize the need for judicious use of dialysis in poison cases. The reader is referred to Dr. Schreiner's article⁷ for a most enlightening discussion.

In the third case, a patient with pre-existing renal disease who goes into renal shutdown following an acute illness requires dialysis to support her through the superimposed illness, whether it be pneumonia, or, as in this case, acute cholecystitis. This case is a

good example of using the patient's appearance as a guideline for dialysis. Frequently, chemistries will belie the need for treatment, and it must always be remembered that Merrill has shown that one-quarter of all patients in renal failure die during the diuretic phase.¹¹

If this paper has served to stimulate physicians in "middle-sized" hospitals to explore the use of dialysis as a means to better medical care, we feel that we have achieved our purpose. Unfortunately, monolithic medicine has convinced many that dialysis is a mystical procedure to be performed only by the chosen few. In our view, we face the one grave danger of delay. Too often dialysis equipment is acquired and sits idly by while patients are needlessly transferred hundreds of miles across the state. Further delay in the implementation of wider use of hemodialysis in general hospitals may stifle the delivery of high-quality health care to all citizens.

We must observe with Brutus then, that:

"There is a tide in the affairs of men,
Which, taken at the flood, leads on to fortune;
Omitted, all the voyage of their life
Is bound in shallows and in miseries.
On such a full sea are we now afloat;
And we must take the current when it serves,
Or lose our ventures."

Julius Caesar, Act IV,
Scene III, Line 217

ACKNOWLEDGMENT

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Clinical Expression of Odontogenic Infection

ROBERT G. BISSELL, D.D.S.*

Often the clinician is presented with a patient who has developed pain, infection or swelling in or about the mandible or maxilla. The purpose of this paper is to explain the clinical expression of odontogenic infection in terms of the anatomic barriers which influence the course.

Generally speaking, most bacterial infections with which we are dealing, are not due to only one particular organism. Most infections are due to mixtures of the same organisms which make up the oral flora. The vast majority of these infections are sensitive to simple Penicillin or Erythromycin therapy. Broad spectrum antibiotics are generally not as effective in the control of these infections, and may indeed foster the growth of resistant organisms. Of course, a culture of any suppurative exudate should be taken, however, many of these swellings do not progress to this point until late in their course.

Infections originating from a tooth or its supporting structures or from the jaws can spread to far-removed parts of the body, however, we will only concern ourselves here to understanding the initial clinical presentation of these infections. Pain of odontogenic origin can be understood in an oversimplified version of what happens when a tooth develops a carious lesion. As the decay spreads in the tooth through the enamel and deeper into the dentine, the tooth pulp reacts by becoming inflamed, with hyperemia of the vessels and hyperactivity of the pain fibers which supply the tooth. At first this pain may be vague and difficult for the patient to localize. This is the stage where the tooth is sensitive to chemical, especially sweet, or thermal stimulation.

As the decay spreads in the tooth, finally the pulpal tissues undergo necrosis. The bacteria which have gained access to the pulp chamber propagate and create pus which spreads through the apex of the tooth creating a periapical abscess. At this stage the tooth acts like a piston, and when pressed or tapped with an instrument produces compression of the abscess and pain. The tooth's neurovascular structure is now necrotic, and the pain which the patient describes as originating in the tooth in reality is originating from pressure on pain fibers by the abscess in the medullary portion of the bone (Fig. 1).



Fig. 1. Possible paths of spread of infection from acute periapical abscess.

When infection occurs in the medulla of the maxilla or mandible it will take the line of least resistance as it spreads. In rare cases it will traverse the medullary bone, producing thrombosis of the arterioles and a resultant osteomyelitis. More commonly it erodes the cortex and spreads into the soft tissues. At this point, one must realize that he is dealing with not one but two infections in different stages of development. The intra-bony infection has perforated the bony cortex into the soft tissues, and the soft tissue infection is at this point developing into a cellulitis. Clinically it is soft and doughy to the touch. The fate of this infection depends on the anatomic soft tissue pocket into which it has spread and its delineating muscles and fascia. The other limiting factor is the response of the patient's resistance elements. When the body can wall off the infection, its progress is stopped. The fate of the infection is either (1) resolution, i.e., healing without pus formation (2) fluctuation, i.e., progressing until anatomically and physiologically it is walled off and undergoes central necrosis with pus formation or (3) extension, i.e., spreading into other soft tissues and the blood stream.

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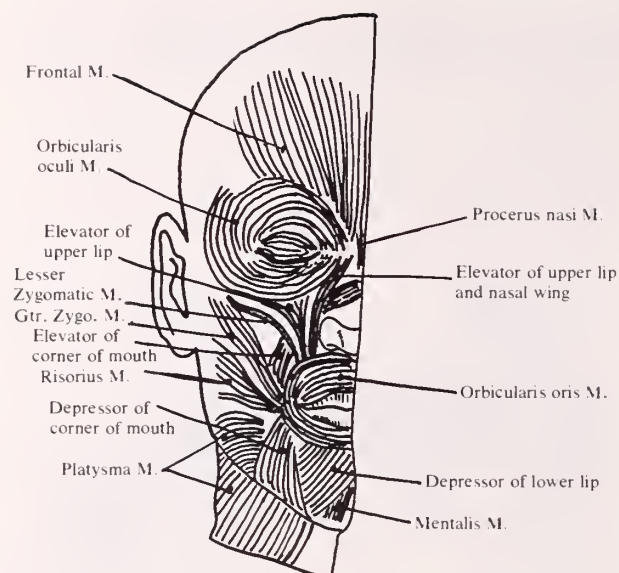


Fig. 2. Superficial muscles of facial expression.

The loose, fat-containing connective tissue of the lips and cheeks is continuous. However, it is, though not completely, partitioned by the muscles of facial expression which arise from the bones of the face and which, as variably wide plates, traverse the subcutaneous tissue, to end in the skin. In infections which are not caused by extremely virulent bacteria, the muscles with their thin perimysium play a role in directing the spread of the infection. In this respect, it has to be remembered that dental abscesses which erode and perforate the outer compact lamella of the upper or lower jaw sometimes do not progress toward the oral vestibule but find their way through the subcutaneous tissue to the skin. The formation of a cutaneous dental abscess is usually restricted to certain groups of teeth. Almost all of these abscesses take their origin from the molars of the upper and lower jaws, from the lower incisors, sometimes from a lower canine, and more rarely, from an upper canine. Upper incisors and upper and lower premolars almost never cause a cutaneous abscess. Furthermore, it can be stated that cutaneous abscesses originating from the molars are much more frequent in children and adolescents than in adults. The key to this behavior of dental abscesses can be found in the arrangement of the muscles of the lips and cheeks.

If the relation of the lines of origin of these muscles to the alveolar process is studied (Figs. 2 and 3), it becomes immediately clear that in the region of the upper and lower premolars, muscles originate at a great distance from the base of the alveolar process. In the lower jaw, the depressor anguli oris and the depressor of the lower lip (triangular and quadrate muscles of the lower lip) arise near the lower border of the mandible; the connective tissue between the mandible and these muscles that is pri-

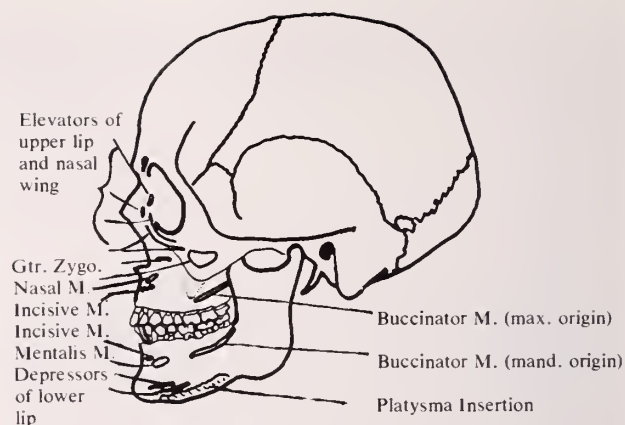


Fig. 3. Origins of muscles of facial expression.

marily invaded after a buccal perforation of a periapical abscess is continuous with the submucous connective tissue, and an abscess in this tissue will become visible and accessible in the vestibule of this region. The path to the subcutaneous tissue on the other hand, is effectively barred by these two muscles of the lower lip and their perimysium. In the upper jaw, the relations between the premolars and the elevator of the corner of the mouth (canine muscle) and the elevators of the upper lip are entirely comparable. The muscles arising in the region of the upper incisors are so small that they hardly influence the spread of an infection, which will advance toward the fornix of the vestibule where the connective tissue is always more loose in character than the subcutaneous tissue in the root of the lips. This is the reason why the premolars and the upper incisors almost never give rise to a cutaneous abscess.

In the anterior region of the lower jaw, the conditions are quite different. Here not only the weak inferior incisor muscle, the counterpart of the superior incisor muscle, but also the strong mental muscle arise from the base of the alveolar process. If the roots of the lower incisors are long, the perforation of the labial plate of the alveolar process may lead into the connective tissue below the origin of the mental muscle, that is, into the subcutaneous tissue of the chin. The path of infection then is toward the skin in front or below the bony chin, because the way toward the submucous connective tissue is barred by the mental muscle and its connective tissue sheath. The same is true for the lower canine if the mental muscle is strongly developed and its origin is widened into the region of the canine socket.

The upper canine may cause occasionally the development of a cutaneous abscess. It is characteristic for such an abscess to become visible and possibly to perforate the skin close to the inner corner of the eye. The reason for this peculiar path of infection is again to be sought in the anatomy of the muscles of the upper lip. Here the muscles are arranged in two layers. The superficial layer is formed by two

muscles: the levator of the upper lip, arising just below the infraorbital rim or margin, and the levator of the upper lip and nasal wing, arising from the upper part of the frontal process of the maxilla. Between these two muscles, formerly known as the infraorbital and angular heads of the square muscles of the upper lip, there is usually a variably wide gap which is widest at the inferior orbital border and which narrows downward where the two muscles fuse. The levator anguli oris (canine muscle) arises from the canine fossa below the infraorbital foramen in a variably long, almost horizontal line above the canine. As a rule, a periapical abscess of the canine breaks through the external alveolar plate below the origin of the levator of the corner of the mouth and then spreads into the submucous connective tissue of the vestibular fornix. If, however, the root of the canine is very long or if, in young patients, the canine has not moved sufficiently downward, its apex may be situated above the level of the origin of the levator of the corner of the mouth. In such cases, a periapical abscess may reach the loose connective tissue, containing the ramification of the infraorbital nerve and blood vessels, in the space between the deep and the superficial muscles of the upper lip. If this connective tissue is involved, the infection may finally spread, one is almost tempted to say escape, through the gap between the levator of the upper lip and the nasal wing and the levator of the upper lip and thus emerge from the depth under the skin just below the inner corner of the eye. Abscesses in this region imitate abscesses originating from the lacrimal sac, and the wrong diagnosis "dacryocystitis" has often been made in cases of this type.

In the region of the molars, it is the attachment of the buccinator muscle to the base of the alveolar process which plays a decisive role for the path of a dental abscess after it has perforated the outer compact layer of the bone. Ordinarily, the line of origin of the buccinator muscle is, in the adult, beyond the level of the root apices of the molars, so that a molar abscess involves the submucous connective tissue while its spread to the skin is blocked by the buccinator muscle and its fasciae. In persons with relatively long roots, or in young persons in whom the height of the jaws has not yet been attained and in whom the teeth have not yet sufficiently erupted from the body of the maxilla or mandible, the apices of the molars may reach beyond the line of origin of the buccinator muscle. An abscess perforating the outer plate of the alveolar process is then barred from the submucous connective tissue by the buccinator muscle and spreads in the subcutaneous tissue toward the skin.

The buccinator muscle plays also a role in the spread of pericoronal abscesses of the lower third molar. These abscesses involve frequently the submucous connective tissue at the buccal side of the

tooth. Here, at the root of the cheek where its mobility is restricted, the vestibule is shallow and the amount of loose connective tissue at the fornix is small. The abscess, therefore, is not very conspicuous before it involves thicker layers of loose connective tissue. The origin of the buccinator muscle at the oblique line directs the spreading abscess forward and downward and it becomes more and more voluminous and pronounced when it reaches the level of the second or first molar. Such infections may seem to originate from a second or first molar and only the knowledge of the peculiar anatomic relations can prevent a faulty diagnosis.

The floor of the oral cavity is formed by the mylohyoid muscle. The connective tissue above this muscle is situated in the oral cavity; the connective tissue below this muscle is part of the connective tissue of the neck. However, the mylohyoid muscle is, in anteroposterior direction, shorter than the oral cavity, so that a muscular floor of the oral cavity, and thus a floor in a strict sense, is lacking in its most posterior part. The importance of these peculiarities of the mylohyoid muscle can best be evaluated if it is assumed that a fluid is injected into the submucous tissue of the sublingual sulcus. If such an injection is made in the anterior regions of this sulcus, back to about the level of the second molar, the fluid will be confined to the oral cavity. If, however, such an injection is made at or slightly behind the level of the third molar, the fluid is injected into the connective tissue of the neck, namely into the submandibular space, and will tend to spread downward. The relation of an infection to the mylohyoid muscle will therefore be of greatest importance to the path of its propagation and for the prognosis of its outcome.

In this respect, it must also be remembered that the line of origin of the mylohyoid muscle begins at the midline close to the lower border of the mandible and ascends posteriorly diagonally across the inner surface of the mandible to the socket of the last molar. The obliquity of the origin of the mylohyoid muscle makes it understandable that the apical level of the roots of incisors, canines, and premolars is always above, that is oral to, the mylohyoid line. The third molar reaches with its root tips always below, that is cervical to, the mylohyoid line; the second molar shows not rarely the same relation as the third molar. The first molar usually behaves like the premolars, only rarely like the third molar. If a periapical abscess originates from the five anterior teeth and perforates the lingual plate of the lower jaw, it will involve the oral sublingual connective tissue. If, however, it originates from the first or second molar, it may in a certain percentage involve the connective tissue below the mylohyoid muscle, that is, the connective tissue of the submandibular space. The latter behavior is the rule for an abscess of the third molar. The infection may even spread from the submandibular niche backward into the

parapharyngeal space, and its downward extension in the connective tissue of the neck is not barred by any obstacle. Fortunately, most infections of the submandibular space remain confined in this region.

Lingual spread of a dental abscess in the mandible will therefore cause an entirely different clinical picture in the molar region from that observed in the region anterior to the molars. If a submandibular abscess spreads downward through the neck, it should be designated as "descending cervical cellulitis;" an abscess above the mylohyoid muscle should be termed "sublingual cellulitis."

Sublingual cellulitis involves primarily the connective tissue which surrounds the sublingual gland, Wharton's duct, and the neighboring structures. It occupies a space which is bounded above by the mucous membrane, medially by the geniohyoid and genioglossus muscles, laterally and below by the mylohyoid muscle. Such an infection may, however, invade the loose connective tissue which separates the individual muscles from each other. Because of the possibility of such an invasion, the terms intermuscular and interfascial "spaces" have been introduced. The term spaces should, however, be strictly reserved for those regions which are filled with loose, sometimes fat-containing, connective tissue.

The intermuscular connective tissue in the sublingual region is characterized by continuing across the midline from one side to the other. Thus, the connective tissue between the mylohyoid and geniohyoid muscles, as well as that separating the geniohyoid and genioglossus muscles, is not interrupted at the midline. Right and left muscles are separated in the midsagittal plane by a thin layer of loose connective tissue. A sublingual cellulitis may therefore spread across the midline and involve two distinct

levels of connective tissue, the lower below and the upper above the geniohyoid muscles. In the midline itself, the cellulitis will involve the tissue between the right and left geniohyoid and the right and left genioglossus muscles and will therefore cause a swelling of the body and base of the tongue itself.

A sublingual cellulitis is confined anteriorly and laterally by the mandible, posteriorly at the midline by the body of the hyoid bone. Lateral to the hyoid bone, however, the infection may spread distally and then pass the posterior border of the mylohyoid muscle. If this happens, the sublingual cellulitis reaches the boundary between the submandibular niche and parapharyngeal space and may spread in the latter downward along the neck. The sublingual cellulitis then ends as a descending cervical cellulitis.

Thus, it can be seen that understanding of the initial clinical symptoms of odontogenic infection is more complex than what would appear on first inspection. The further spread of these infections into the various spaces of the head and neck is again dependent upon the soft tissue barriers and fascial planes in the area of the infection. As this is also a lengthy subject, I shall present this side of the story at a later time.

It is hoped that by presenting the anatomic factors which influence the initial symptoms of infections of odontogenic origin, the clinician will be better able to understand and diagnose these conditions.

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Base Excess

A Brief Review of Its Origin and Value

WILLIAM H. AUSTIN, M.D.*

Base excess is an interesting, sometimes confusing and controversial concept advanced by Siggaard-Anderson¹ and strongly supported by Astrup and others.² Siggaard-Anderson's text¹ has the most complete treatment of the concept, although interesting chapters relative to base excess and related subjects may be found in a recent publication of the *Annals of the New York Academy of Science*.³

Base excess may be defined as the difference between the normal buffer base and the observed buffer base ($BE = NBB - OBB$). Buffer base is, in turn, defined as the sum of the "buffer anion" (i.e., salts of weak acids whose pK_a is near the physiologic range) which occur within a liter of whole blood. These include bicarbonate, basic hemoglobin proteinate, phosphate and a few other anions. Base excess may also be defined and determined in another fashion. It may be considered to be the equal of the number of milliequivalents of acid or base required to return the pH of whole blood to 7.40, with the PCO_2 held constant at 40 mm, and at 37°C. From the practical point of view, base excess may be calculated from pH and PCO_2 by tables,^{4,1} graphs^{2,1} or the slide rule.⁶ There is an equilibration technique in which pH is determined on a test sample of blood at two other PCO_2 s. This is the "Astrup Method," which describes a buffer line;² the base excess is then calculated graphically. This entire process is explained in detail elsewhere.^{1,5} The base excess may also be calculated from the Van Slyke standard bicarbonate, as noted by Siggaard-Anderson.³ Practically speaking, it is intended to be an index of the deviation of the metabolic (basic) fraction of the buffer system from normal.

Schwartz and Relman have made the most penetrating analysis of base excess in their classic article which appeared in the *New England Journal of Medicine* several years ago.⁷ Filley, in his recent text⁵ also presents a comprehensive summary of the origin and value of base excess. In these publications, reference is made to several important points relative to the merits of base excess and bicarbonate. They cite recent work which indicates that *bicarbonate* accurately reflects the percentage change in total body buffer stores.⁸

Reference is also made to the fact that base excess usually parallels the deviation in bicarbonate from normal values, and that base excess is itself a *de-*

rived entity. Also, an example of the inaccuracy which can result from the use of base excess is cited.⁵ In the situation where there is an elevation of PCO_2 and a subsequent rise of bicarbonate, there is a translocation of bicarbonate from the plasma to the interstitial space where HCO_3^- is lower.^{9,10} When the measurement is made to determine base excess, a lower value than anticipated is determined, implying that there has been an accumulation of fixed acid when actually there has only been a relocation of the plasma bicarbonate. To fully understand this, it is necessary to reconsider the matter of buffer-base. In an *in vitro* situation, where the PCO_2 of whole blood is increased, there is a secondary rise in bicarbonate, which is accompanied by and paralleled by a decrease in the non-bicarbonate buffer anions. The increase in bicarbonate and decrease in non-bicarbonate anions exactly equal one another, so there is no change in the buffer-base or, therefore, base excess. From this it is said one can conclude that the changes observed are purely respiratory. By the same token, if the PCO_2 is decreased, there will be a secondary decrease in bicarbonate with a reciprocal rise in non-bicarbonate buffer anions. Again, there will be no overall change in buffer base, hence base excess. If fixed acid or base is added to whole blood, there will be an increase or decrease in both bicarbonate and non-bicarbonate buffer anions. This will, of course, increase or decrease the buffer base, hence change base excess. In the *in vivo* situation, as in chronic respiratory acidosis, there is a rise in the PCO_2 with an increase in the bicarbonate due entirely to hemoglobin buffering (with no change in base excess). There is also a *secondary* increment in bicarbonate in the blood. This means that one would expect an increase in base excess in chronic respiratory acidosis, since buffer base (HCO_3^-) has been augmented by this renal mechanism. In the example cited above, base excess is actually increased; however, the increase is "inappropriate" for the situation. That is to say that the *in vivo* elevation of base excess is *less* than would be in an *in vitro* situation because of the diffusion of bicarbonate, implying a concurrent metabolic acidosis.

It has been stated that base excess allows for the calculation of replacement therapy. Filley again notes⁵ that the same applies to bicarbonate, and that adequate estimation of replacement therapy can be made by deriving a formula based on the deviation of bicarbonate from its normal value.

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Since (a) base excess is a derived value, (b) plasma bicarbonate indicates the percentage change in total body buffer stores,⁸ (c) base excess is subject to an erroneous interpretation, especially at high PCO_2 ^{5,9,10} and (d) perhaps most importantly, the difficulties imposed by introducing new and unfamiliar terms into the acid-base literature^{7,11} all coupled with the fact that base excess does not improve patient care, makes us believe that the promulgation and use of base excess only further muddies the cloudy waters of acid-base physiology.¹¹ However, we would heartily encourage the reader to review for himself the pertinent literature relative to base excess, its merits and demerits. The references cited here are adequate for understanding the derivation and use of base excess.

We leave the subject of base excess with the suggestion that the reader not only draw his own conclusions, but calculate and use either bicarbonate, CO_2 content or even base excess. We believe that the knowledge of the "third variable" in acid-base balance adds greatly to the understanding of the whole problem. Knowledge of PCO_2 and bicarbonate (or base excess) gives the physician some direction for his therapy, while the pH is used pri-

marily as an indication of the need and success or failure of treatment.¹²

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Health Care and the 106th Special Legislative Session

CHARLES L. CRAGIN III, Esq.*

The 106th Maine Legislature which met in Special Session during the first three months of 1974 continued its precedent shattering activities by remaining in session until March 29, 1974, thus claiming the distinction for conducting the longest special session in the history of the State. Much derision was heaped upon the Legislature for its longevity and its "negative accomplishments." While it is not my purpose to serve as apologist for the Maine Legislature, it is important to view these charges from two bases.

Initially, proponents of governmental reform, including the news media, have been espousing the concept of annual legislative sessions for the past several years. Viewed in this perspective, the Special Session was a grand and glorious experiment. It gave the Maine citizenry an example of what can be expected from annual legislative sessions. Setting aside semantics for the moment, it can be safely said that Maine has been conducting annual sessions for several years. It's just that one session is longer than the other!

Secondly, an objective review of the legislation considered by the legislative session is a frank rebuttal of charges of "negative accomplishments." Any critic can seek out petty legislative documents in any session if the purpose is to demonstrate a lack of accomplishments. An analysis of legislation affecting the quality and cost of health care delivery and education is one category which clearly points out the desire of the Maine Legislature to deal with involved issues in its attempt to resolve problems or, at least, alleged problems.

The purpose of this article is to review, at least in summary fashion, legislation enacted by the Special Session which has either a direct or peripheral effect upon the health care delivery system in Maine. As in the regular session, approximately 20 percent of all legislative documents considered in Special Session had at least some effect upon health care in Maine.

During the Special Session, the Legislature considered a total of 562 legislative documents. Of these, 161 were enacted as Public Laws, 74 as Private and Special Laws, 25 as Resolves, and 3 as Constitutional Resolutions for a total of 263 documents achieving final passage. Of major impact to the traditional "licensure" type of structured delivery system was a legislative document introduced by Senator Wakine Tanous entitled "An Act Relating to Delegation of Selected Services by Professional Nurses." This legislation was precipitated by an opinion of the Attorney General's office in 1973 stating that unlicensed personnel could not legally administer medication. The 106th Legislature had enacted an immunity statute permitting unlicensed personnel to administer medication until July 1, 1974. Senator Tanous, Chairman of the Judiciary Committee before which the bill was heard, called upon the Legislature to reach a more permanent solution to the problem. What resulted after much disagreement between professional nurses, in particular, has become Chapter 737 of the Public Laws of 1973. It permits registered nurses to delegate "selected nursing services" to non-licensed individuals after these individuals have received training in programs approved by the Board of Nursing. Assuming that the Board would require time to establish regulations for implementation of the "delegation" statute, the Legislature also amended the immunity provision to permit certain unlicensed individuals to administer medication until July 1, 1975.

This legislation is important in two respects. Initially, it provides a legal vehicle for modifications in the health delivery system if it is determined that a registered nurse can be better utilized in handling more sophisticated treatment procedures. Secondly, it demonstrates the wide divergence of opinion within professional nursing concerning such delegation which divergence, in the final analysis, forced the Judiciary Committee and the Legislature to make a decision in the face of differing views within the nursing profession. The lesson to be learned is this: If the Legislature determines that something is necessary, it will take that action regardless of whether the professions involved are in total agreement.

A hotly debated and heavily lobbied legislative document finally reached the Governor's desk and, on the final day of the legislative session, "An Act to Increase the Cigarette Tax and Provide Funds

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for Catastrophic Medical Expense," was approved by the Governor. This document appropriated \$2,-840,000 and authorized the Department of Health and Welfare to "provide financial assistance to . . . families or individuals whose costs for hospital in-patient or out-patient care, physician's services . . . cannot be met from their own or other sources, when said costs are of such a magnitude as to constitute a financial catastrophe . . . or when it can be determined that medical indigency exists."

Representative John Martin of Eagle Lake, sponsor of the bill, indicated that additional funds should be forthcoming from the Federal Government to assist in funding the program. One critical point in the law is that payments may be made only to the providers of care and therefore providers should be aware that they may have to encourage applicants to ascertain whether they can meet the eligibility requirements.

In the field of medical education, the Legislature made attempts to rectify, at least to some extent, the stringent financial tests which it had imposed in 1973 on Maine students attending certain medical schools. In 1973, the Legislature had indicated its intent that medical students at the University of Vermont College of Medicine and Dartmouth College Medical School should only have the State paying for seats at such schools if the student needed financial assistance. The determination of need by the school had to be approved by the Maine Board of the New England Board of Higher Education (NEBHE). This legislation caused great problems concerning its interpretation and implementation and to the contractual basis upon which the various institutions guaranteed seats to Maine students. The Appropriations Committee recommended total repeal of the conditional language.

However, Senator Bennett Katz of Augusta, President of NEBHE, strenuously objected to repeal and, as a compromise measure, "An Act to Encourage Maine Students at Graduate Schools to Become Physicians and Dentists," was enacted into law. This act repealed the language set forth in 1973 and instead stated clearly that the State was to enter into contracts with out-of-state medical and dental schools "to assure and guarantee that a certain number of Maine students who are academically qualified are admitted. . . ." It does provide, however, that beginning with the 1974-1975 academic year the institution, after consultation with but *not approval* of the Maine Board of NEBHE, shall determine whether a student can afford to pay a higher tuition rate than he or she would normally be charged under the contract. If so, the difference between the tuition rates is to be remitted to the State. In other legislation, an appropriation of \$75,-000 was made to provide for "15 added students at the University of Vermont School of Medicine."

In the field of medical office management, the

Legislature took one step bearing certain impact. Chapter 746 of the Public Laws, effective June 28, 1974, makes it compulsory that private employers, including physicians, carry workmen's compensation insurance or provide other satisfactory security. Until enactment of this legislation, workmen's compensation insurance was voluntary. Now, however, any employer not providing the required security is subject to a criminal penalty of a fine up to \$1,000, imprisonment for one year, or both.

Legislation emanating from the Maine Management and Cost Survey (the so-called Longley Commission) proposed that all funds currently held by the Board of Registration in Medicine not necessary for current operating expenses should be returned to the general coffers of the State. This document, which also encompassed many other State boards and agencies, was substantially diluted by the time it reached the enactment stage. Under the legislation, as enacted, the Legislature reserved the right to review accumulated funds but did not take the ultimate step of divesting the various boards of accumulated funds. At the public hearing on this legislation, representatives of the Board of Registration in Medicine and the Maine Medical Association indicated to the Appropriations Committee that funds held by the Board should not be divested but, rather, should be utilized for continuing medical education.

Also emanating from the Longley Commission was a recommendation that the Chief Medical Examiner be placed under the Chief of the State Police. The State Government Committee accepted the suggestion in principal but finally enacted legislation placing the office within the Department of the Attorney General.

Also enacted were several laws either creating or modifying hospital administrative districts; changing the name of Peoples Benevolent Hospital to Northern Maine Medical Center; appropriating funds for emergency medical training for ambulance and rescue personnel; and increasing the jurisdiction of the Maine Health Facilities Authority to permit it to finance the construction of non-profit nursing homes.

The laws relating to hospitalization of mentally ill which had been "totally revamped" in 1973 were subjected to a cleansing in the Special Session after it was discovered that admission and committal procedures set up in 1973 would not operate properly. The Judiciary Committee's recommendation to include within the law licensed psychologists, who practiced clinical psychology, was accepted by the Legislature. As of March 11, 1974, when the law became effective, clinical psychologists are legally permitted to provide certificates in conjunction with emergency admissions and judicial commitments.

In the field of tax exemptions, the Legislature granted an exemption from taxation to non-profit hospitals, blood banks and health maintenance organizations on real or personal property which is leased by such organizations. Until enactment of this legislation, hospitals had been required by lessors of property which was leased, to pay such taxes as were attributable to leased property.

While this is not a comprehensive review of all legislation enacted during the 106th Legislature's Special Session, it does demonstrate the amount of time spent by the Maine Legislature on matters affecting the health care delivery system in the State of Maine. At least 20 original legislative documents dealing with some facet of health care were defeated in the past session. These included an act permitting pharmacists to dispense generic equivalents; and an act relating to confidentiality of birth records. A legislative document proposing the establishment of a Central Licensing Bureau to handle all professional licensure, including the Board of Registration in Medicine, was also defeated.

The increasing amount of legislation dealing with

the health care field, when combined with the increasing complexity and sophistication of the issues, requires all professionals in the field to take an active interest in the legislative process and to stand ready to provide up-to-date, relevant information to the Legislature and its various committees. We cannot fault the relatively under-staffed Legislature with failing to properly deal with important issues if the professionals in the field fail to provide input and information to the Legislature.

Many things are not certain in the lives of mortal beings. However, leaving aside constitutional amendments and nuclear holocaust for the moment, two things are certain.

First:

The Legislature shall convene on the first Wednesday of January biennially, and, with the exception hereinafter stated, shall have full power to make and establish all reasonable laws and regulations for the defense and benefit of the people of this State, not repugnant to their Constitution; nor to that of the United States. ME. CONST. art. IV, §1

Second: January 1, 1975, is coming!

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Special Article

Rheumatic Fever III: Overdiagnosis

Certain clinical features such as abdominal pain, rapid sleeping pulse rate, tachycardia out of proportion to fever, malaise, anemia, epistaxis and precordial pain are seen more commonly in other diseases than they are in rheumatic fever so that their usefulness is less than that of the established Minor Criteria. Although they are not to be considered diagnostic, they may provide additional evidence of the presence of rheumatic fever, as does a family history of rheumatic fever.

Combinations of Major and Minor Manifestations and features may be caused by other diseases which may have to be ruled out before a definitive diagnosis of rheumatic fever is made. One combination particularly — polyarthritis, fever or elevated sedimentation rate — is common in a variety of other disorders. Diseases to be ruled out include rheumatoid arthritis, systemic lupus erythematosus, subacute bacterial endocarditis, serum sickness, gonococcal arthritis, sickle cell anemia, viral pericarditis or myocarditis, leukemia, tuberculosis, undulant fever and septicemia, particularly meningococcemia. Most of these diseases can be diagnosed with assurance by appropriate tests. Streptococcal anti-body determinations are often useful in these differential diagnoses especially in stimulating the search for other causes when they show no increase.

Following a well documented streptococcal infection, the conscientious physician may note suggestive evidence of rheumatic fever such as vague pains in the extremities, borderline temperature elevations, increased intensity of the functional murmur, tachycardia during the physical examination of an anxious or hyperactive patient, and increased erythrocyte sedimentation rate, and prolonged PR interval on the electrocardiogram.

Follow-up of such patients has *not* revealed the delayed appearance of rheumatic heart disease. In the vast majority of cases, significant murmurs of rheumatic carditis appear within the first few weeks of the disease; very rarely do they appear later than three months after the onset of the rheumatic attack, and almost never after six months. Patients without significant cardiac murmurs during acute rheumatic fever have a good chance to escape rheumatic valvular disease.

The diagnosis of acute rheumatic fever should be made, therefore, with conservatism and with insistence upon clearly expressed Major clinical manifestations.* A common error is the premature administration of corticosteroids or salicylates before the signs and symptoms of rheumatic fever become unmistakable. This often leaves an ill-defined syndrome only presumptively rheumatic fever, and the subsequent management of the patient, particularly in the indications for the long-term chemoprophylaxis, is in doubt. In the presence of curative agent, one should not suppress the signs and symptoms of rheumatic fever until they are clearly expressed.

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J. R. Wise, Jr., *Chairman*
Rheumatic Fever Committee

*Jones criteria (revised) For Guidance in the Diagnosis of Rheumatic Fever. American Heart Association, EM 145, 1967.

The Clinical Use of Procainamide

RUSSELL R. MILLER, Pharm.D.* and DAVID J. GREENBLATT, M.D.**

Procainamide is one of the most useful antiarrhythmic agents currently available. When given appropriately it is effective against the great majority of ventricular arrhythmias and has a low frequency of untoward effects.¹ In the past, however, many clinicians found procainamide to be ineffective or toxic. As a result, the drug was frequently relegated to a place of secondary importance in antiarrhythmic therapy. Recent pharmacokinetic studies² provide an explanation for most of the therapeutic failures and serious toxicity observed previously.

The therapeutic and toxic effects of procainamide correlate well with its plasma concentrations. In contrast, the relationship between oral dosage and plasma concentrations often varies by as much as 400% among patients. This explains many of the therapeutic problems associated with the use of procainamide.

The usual effective antiarrhythmic concentration of procainamide in plasma is 4 to 8 ug/ml. These concentrations are safe even in patients with preexisting atrioventricular or intraventricular conduction disturbances or with mild hypotension. Plasma concentrations between 8 and 12 ug/ml control arrhythmias in an additional 10% of patients who do not respond satisfactorily to lower levels. Very few patients require higher concentrations for therapeutic success. Serious toxicity (hypotension, conduction disturbances, ventricular tachyarrhythmias, and cardiac arrest) is very rare with concentrations of less than 12 ug/ml but is increasingly common at higher concentrations. Plasma levels of less than 4 ug/ml suppress arrhythmias in only a minority of patients.

Considerable variations in plasma concentration of procainamide occur among patients who receive similar doses (based upon body weight) at similar time intervals. These variations are related not only to differences in cardiac and renal function, but also to unpredictable individual variations in completeness of absorption, distribution space and elimination rate. Thus, the administration of a "usual" dose of procainamide at "appropriate" time intervals will not necessarily provide therapeutic plasma concentrations. A significant number of patients require plasma level determinations to guide appropriate adjustment of dosage.

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Procainamide must be given at intervals no greater than its biologic half-life to prevent fluctuations of more than 50% in its plasma concentrations. The half-life of procainamide in subjects with normal cardiac, renal, and hepatic function ranges from 2.2 to 4.0 hours and averages 3.1 hours. In patients with renal insufficiency, the half-life can reach 8 hours. In most patients, when 375 mg is given every three hours, plasma concentrations fluctuate by 34% and remain within the optimal therapeutic range (4 to 8 ug/ml).³ When 750 mg is given every six hours, concentrations fluctuate by 66%, and reach extremes outside of the optimal therapeutic range.

PROCAINAMIDE USAGE AT NEW ENGLAND MEDICAL CENTER HOSPITAL

A survey of inpatient and outpatient procainamide prescribing during November and December 1973 at the New England Medical Center Hospital in Boston showed that only two prescriptions were written with "q3h" directions (see Table). If one makes the somewhat generous assumption that those prescriptions written with "q4h" directions provided therapeutic plasma concentrations, then only 9 (39%) of 23 prescriptions for procainamide appear to be rational in view of the known pharmacokinetics of procainamide. Of course, it is possible that one or two of the patients who received procainamide on a "q6h" schedule had impaired renal or cardiac function which necessitated this more infrequent dosage. In any event, the practice of prescribing procainamide on a "qid" or "tid" schedule is clearly undesirable.

USE OF PROCAINAMIDE IN VENTRICULAR ARRHYTHMIAS DUE TO ACUTE MYOCARDIAL INFARCTION

The approach to therapy of ventricular tachyarrhythmias in acute myocardial infarction has been discussed elsewhere.⁴⁻⁷ If procainamide is used in this setting, the following dosage regimen is recommended.

1. In patients with normal cardiac and renal function who are not critically ill, 50 mg/kg per day of procainamide given in 3-hourly oral doses of 250, 375, or 500 mg, depending on patient weight, usually will maintain the plasma concentration in the therapeutic range. If the patient responds satisfactorily to this regimen, determination of plasma levels of procainamide is unnecessary. Most patients who are candidates for procainamide therapy fall into this category.

DOSAGE SCHEDULES AND DOSES OF PROCAINAMIDE
AT NEMCH DURING NOVEMBER AND DECEMBER, 1973

<i>Dosage Schedule</i>	<i>Dose (mg)</i>	<i>Number of Patients</i>
q3h	250	1
	500	1
q4h	250	5
	500	2
q6h	250	6
	500	3
qid	250	2
tid	375	1
	500	1
qd	500	1
Total		23

2. If the patient a) has cardiac or renal insufficiency, b) is critically ill, c) has received procainamide at the above dosage level without achieving the desired antiarrhythmic effect, or d) has received procainamide and experienced toxic effects, plasma level determinations should be done. The usual procedure is to send to the Clinical Chemistry Laboratory two blood samples: 1) one drawn immediately prior to the administration of the maintenance dose, and 2) a second sample drawn 30 to 60 minutes after the administration of the maintenance dose. These samples should span the range of the upper and lower plasma procainamide levels. Information on plasma levels will permit adjustment of the dose and dosage interval so that plasma procainamide concentrations stay within the 4 to 8 ug/ml range. Failure to reduce the usual daily dose in patients with frank renal insufficiency invariably results in dangerously elevated concentrations of procainamide in the body.

3. Parenteral loading doses of procainamide should be given in urgent situations when therapeutic plasma concentrations must be attained rapidly. The usual loading dose is twice the maintenance dose. Intravenous administration is safe provided the infusion is given slowly⁸ (25 to 50 mg/minute) and is preferable to intramuscular injection because of the large volumes usually given (procainamide injection is a 10% solution [100 mg/ml]). Maintenance therapy is begun three hours after the loading dose.

If maintenance therapy is started without a loading dose, therapeutic plasma concentrations are reached after four to five maintenance doses given at three hour intervals.

PROPHYLACTIC USE OF PROCAINAMIDE

Acute Myocardial Infarction

The prophylactic use of antiarrhythmic agents in acute myocardial infarction is controversial.⁹ Virtually all patients with acute myocardial infarction experience ectopic ventricular activity within the first 48 hours after the onset of their disease. It is not clear which of these arrhythmias are "premoni-

tory" to life-threatening tachyarrhythmias, nor whether the prophylactic administration of antiarrhythmic agents is effective in preventing life-threatening disturbances of rhythm. Thus, the uncertain benefits of routine prophylactic therapy with antiarrhythmic drugs may be outweighed by the hazards associated with their use.

In a well-designed study, the administration of procainamide to all patients with acute myocardial infarction who were admitted to a coronary care unit significantly reduced the incidence of ventricular tachyarrhythmias in comparison to placebo treatment.¹⁰ Mortality in drug- and placebo-treated groups, however, was the same. These findings suggest either that procainamide is ineffective in preventing fatal arrhythmias or that the deaths in this series of patients were due to other causes.

Similar results have been reported in other controlled trials with lidocaine,¹¹⁻¹³ quinidine,¹⁴ and diphenylhydantoin.¹⁵ Prophylactic propranolol and bretylium are no more effective than placebo, and in some patients cause serious adverse effects.⁹ There appears to be no justification for administering prophylactic procainamide or any other antiarrhythmic agent in acute myocardial infarction, provided patients are monitored in a coronary care unit where acute treatment of rhythm disturbances can be undertaken as necessary. The possible role of antiarrhythmics in the pre-hospital phase of acute myocardial infarction has not been adequately investigated.

Post-Hospital Phase of Myocardial Infarction

The incidence of tachyarrhythmias in acute myocardial infarction remains high even several weeks after the onset of disease.¹⁶ Again, it is not clear which of these rhythm disturbances are potentially life-threatening nor whether antiarrhythmic agents are effective in their prevention or control.¹⁷ One study¹⁸ showed that diphenylhydantoin prophylaxis reduced mortality in post-myocardial infarction patients while another¹⁹ did not. Procainamide has not been investigated. However, this drug must be taken every three hours to maintain adequate plasma concentrations; furthermore, long-term procainamide results in side effects in a significant proportion of patients.²⁰ Therefore, it seems unlikely that the possible benefits of prophylactic procainamide in ambulatory myocardial patients outweighs the hazards and disadvantages of such therapy.

ACKNOWLEDGEMENTS

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From the Secretary's Notebook

SUMMARY OF PROCEEDINGS, INTERIM MEETING, M.M.A. HOUSE OF DELEGATES, APRIL 6, 1974 AT WATERVILLE, MAINE

The Interim Meeting of the M.M.A. House of Delegates was held at Thayer Hospital in Waterville, Maine on Saturday, April 6, 1974 with an attendance of 35 delegates and alternates and three guests. Paul A. Fichtner, M.D., President of the M.M.A., called the meeting to order, and George W. Bostwick, M.D., Speaker of the House, presided. Except for Executive Committee members and a Past President, the following County medical societies were not represented with an official delegate or alternate: Hancock, Penobscot, Piscataquis, Somerset, Waldo or Washington.

1. **Financial Statement of Income and Expenditures for 1973 and Budget Proposed for 1975** was presented by Dr. Richard C. Leck, Chairman of the Budget Committee. Final action on the proposed budget will take place at the annual meeting of the House of Delegates on Saturday, June 15, 1974 at the Shawmut Inn in Kennebunkport, Maine.

2. The preliminary written **report of the Committee on Nominations** was presented. The report consisted of nominees for vacancies on the standing committees, and 2 nominees for the office of President-elect and for each position to be filled on the Executive Committee (this year, Districts 3, 7 and 8). **A brief biographical sketch of each officer nominee** was sent to members of the House of Delegates.

Final vote on the report of the Committee on Nominations will take place at the second session of the House of Delegates on Sunday, June 16, 1974.

3. Committee Reports:

a) *Medicine and Religion* — Peter A. Emmett, M.D., Chairman, read his report which was presented to the delegates prior to the meeting, and it was *approved*.

b) *Legislation* — Brinton T. Darlington, M.D., Chairman, reported that this was the busiest "between session" session ever. He reviewed the major bills that concerned the M.M.A. A written summary of the session will be prepared by June and will be published in an upcoming issue of The Journal.

c) *Continuing Education* — Richard T. Chamberlin, M.D., Chairman, reviewed the M.M.A.'s action which next year will require all members to report their continuing education as a requirement for M.M.A. membership. The Committee has chosen to use the AMA Physician Recognition Award reporting form. We will record the information in our office from that form, and then forward it to the AMA if desired. Accrediting of programs in Maine will begin soon — starting with one or two this year.

d) *Peer Review* — Richard T. Chamberlin, M.D.,

Chairman, reported that as instructed by the House of Delegates, they have proceeded cautiously. After several meetings of an ad hoc group, they now have the articles of incorporation and bylaws of the Pine Tree Organization for Professional Standards Review. Dr. Chamberlin explained how he anticipates the program will develop in the upcoming months, and answered many questions from the delegates. An annual report will be given at the June House of Delegates meeting.

4. The following **resolutions** were presented and each will be referred to the June meeting of the House of Delegates for action:

Kennebec County

RESOLVED: That Chapter 1, Section 5 of the Bylaws shall be and hereby is amended by deleting the period at the end of the first sentence, substituting therefore a comma, and adding the following phrase, "or for other compelling reasons," so that this first sentence shall read as follows: "Affiliate members may be elected by the House of Delegates from those who are members in good standing of this Association, upon recommendation of their respective county societies, when they have retired from active practice, or when they have been physically disabled, or for other compelling reasons."

Androscoggin County #1

WHEREAS Psychiatry is a medical specialty, and
WHEREAS the practice of Psychiatry is the practice of medicine, and

WHEREAS the community mental health centers and State hospitals contain the practice of Psychiatry, and

WHEREAS the present system allows for most psychiatric patients to be treated in the large part by non-medical persons and that new policies and programs affecting patient care in the entire mental health system are being made by non-medical persons with very little or no input from the Psychiatrist, it is believed the quality of patient care under this existing system is in serious jeopardy,

THEREFORE BE IT RESOLVED by the Maine Medical Association that the care of psychiatric patients within the community mental health centers and State hospitals be under the direct control of Psychiatrists and that administration be redefined to assist rather than direct the Psychiatrist.

Androscoggin County #2

WHEREAS the diagnostic and therapeutic needs of a patient are the same, no matter if treated by a physician in the hospital or in a physician's office,

WHEREAS third-party health insurance carriers have developed discriminatory policies on payment of

patients' benefits and treatments, in that the cost of many supplies, laboratory tests, and treatments performed in the hospital are reimbursable, and the same performed in a physician's office are not reimbursable.

THEREFORE BE IT RESOLVED by the Maine Medical Association that it shall oppose these discriminatory practices and so notify all major health insurance third parties, and that the Maine Medical Association is prepared to take action if adequate resolution of these inequities by the third party health insurance carriers is not accomplished.

5. Report of the Executive Committee on the **Survey of Maine Psychiatrists Concerning Mental Health Centers in Maine** — Dr. Fichtner reported that Dr. Nicholas Fish presented his collection of data, which has been requested by the Maine Psychiatric Association, to the E.C. of the M.M.A., initially as an oral report and subsequently in written form. This survey questioned the effectiveness of the mental health system in Maine, and expressed concern of M.D.'s with the level of care being given. No release of this information was made by the M.M.A., Dr. Fichtner emphasized. The Executive Committee, at its meeting this morning, discussed the report at length and voted to make every effort to study the mental health situation as it now exists in the State of Maine, and to do so will create a Commission, utilizing experts in the field, from within as well as outside the State.

6. Other:

a) Dr. Peter Leadley reported to the delegates that May will be delegated "**National (and Maine) High Blood Pressure Month.**" A large number of agencies and organizations are planning public education,

screening or other high BP related activities to coincide with this effort. The Maine Bureau of Health has agreed to act as the clearinghouse for information about those activities that are planned. Dr. Leadley urged the physicians to notify him of any activities in this area that they are aware of.

b) **Resolutions** approved by the Knox County Medical Society were mentioned by Dr. Bostwick. They were not presented in proper form for action by the House of Delegates. Suggestions were made for resolving some of the problems mentioned in these resolutions, and Dr. Bostwick offered his assistance to the KCMS, if they wished to present these in resolution form for the annual meeting of the M.M.A. House of Delegates.

c) Dr. Robert Ficker, Chairman, reported on the Executive Committee's action in regard to **Tel-Med**. At its 2/9/74 meeting, it was voted that "we endorse the concept of Tel-Med as being formulated by the Franklin County Medical Society." A second motion asking that "the M.M.A. appropriate \$500 as evidence of support of Tel-Med as being developed by the F.C.M.S.," was defeated.

d) Dr. Fichtner reported on a survey of our county societies, done at the request of the AMA, asking if Maine physicians would be willing to work for **repeal of PSRO**. Of those responding, the majority indicated that they would be willing to work for repeal. Dr. Fichtner also mentioned that last June, however, the M.M.A. did conditionally approve of PSRO.

PATRICIA A. BERGERON

Secretary-Treasurer, M.M.A.

THE CLINICAL USE OF PROCAINAMIDE — Continued from Page 144

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—News From Blue Cross and Blue Shield—



HIGHLIGHTS OF ANNUAL MEETING

Two new members were elected to the Maine Blue Cross and Blue Shield Board of Directors and five incumbent members were re-elected at the Company's Annual Meeting.

Elected as a Public Representative on the Board for a three-year term was Lloyd W. Knox, an Investment Banker with H. M. Payson and Company in Portland. Knox is a graduate of Hamilton College and Boston University Law School. He replaces Joseph T. Gough, Jr., who passed away last February.

Charles H. Lightbody, M.D., a physician from Guilford, Maine, was elected to a three-year term as a representative of physicians. A Waterville native, Dr. Lightbody graduated from Colby College and received his M.D. degree from the University of Maryland. Dr. Lightbody replaces Dr. Linus Stitham of Dover-Foxcroft who served on the Maine Blue Cross and Blue Shield board for 19 years.

Incumbents re-elected to the Board for three-year terms were George Baer Connard of Bath, Chairman of the Board, Philip K. Reiman of Portland, Kenneth W. Sewell, M.D., of Waterville, Harold G. Loring of Portland, and Richard J. Stride of Cumberland Foreside.

Annual Report Message

In his report to members, George Baer Connard, Chairman of the Board, stated: "It is extremely gratifying to see that the administrative expense of all Maine Blue Cross and Blue Shield operations was kept at below eight percent of income, that reserves have been built to a point that gives increased financial stability to our organization, and that our membership has grown to the point where nearly half the population of Maine is now covered, and it is evident to us that we are fulfilling our corporate purpose of providing the best healthcare benefits at the lowest possible cost."

Highlighted in the 1973 Annual Report was the fact that membership climbed to 459,607, and more claims were paid by Maine Blue Cross and Blue Shield in 1973 than ever before, with 604,905 claims totaling \$43,128,492.

Consumer Role Increased

The Regional Consumer Advisory Councils, established in 1972 by Maine Blue Cross and Blue Shield to provide the consumer of healthcare with increased input into the decision-making process,

were given added voice in the Company when they were invited to attend all meetings of the Board of Directors so that they could provide, first-hand, consumer feelings about the state of healthcare to a Board that is already composed of one-third public membership. A yearly consumer audit of the entire Maine Blue Cross and Blue Shield operation is done by representatives of the four councils, and the 1973 Report indicated that Maine Blue Cross and Blue Shield has been successful in responding to consumer input, and has been able to help maintain consumer confidence by providing the consumer with an open look at the workings of the corporation.

New Programs

Confidence in Maine Blue Cross and Blue Shield has also grown with the development of new programs which help to modify the costs of healthcare. Such programs as Coordination of Benefits and Coordinated Home Health Care, as well as the Utilization Review clause and outpatient benefits included in the new Revised "F" Blue Cross Contract were all developed toward the goal of providing coverage for the best possible services at the lowest possible cost.

Certain policies and programs, promulgated over the years to provide cost efficiencies in the delivery and payment for healthcare, were included in the Revised "F" Certificate of Contract. The new Certificate, published for the sole purpose of bringing subscribers' records up to date with their coverage, contains expanded outpatient benefits, increased benefit periods, some increased inpatient benefits and a new policy which provides for subrogation.

Health Education

Maine Blue Cross and Blue Shield has enhanced its efforts in consumer health information which now includes the active support of Statewide programs and distribution of booklets and films developed by the national Blue Cross and Blue Shield organizations. Maine Blue Cross and Blue Shield became a part of a Health Education Resource Utilization Consortium in 1973 which has, to date, made the "Inside/Out" program, a set of 30 television dramas designed for effective learning in the classroom, available on a Statewide basis. The Company also provided a grant to the Maine Public

Continued on Page 149



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

Protecting the Abused Child in Maine

DOUGLAS A. HALL, M.S. in S.S.†

Although Maine has had a mandatory reporting law requiring physicians and hospitals to report on suspected child abuse for nearly a decade, the statute has not significantly increased the number of reports received by the Department of Health and Welfare. It is estimated that of the approximate 170 annual reports of abuse in Maine, less than ten percent are referred by physicians or hospitals.

Studies on the nationwide reported incidence of child abuse show 250 to 300 reports per annum per one million general population. Maine with nearly one million inhabitants then is below the national average of reported abuse situations.*

A decade has passed since states in the nation individually designed mandatory reporting laws to protect children. Most of these early laws were aimed at the medical establishment because the medical profession's literature was recognizing the "Battered Child Syndrome" and encouraging its practitioners to explore with more care those children whose parent or caretaker glibly told of some vague accident to a child.

In 1965, the State of Maine enacted legislation, which provided for protecting abused children coming to the attention of a physician. Some key components of the statute include:

1. Mandatory reporting by physicians with reasonable cause to believe a child under sixteen years of age has had physical injury or injuries inflicted upon him by other than accidental means.
2. The physician has immunity from liability.
3. There is a penalty clause for failure to report that has never been imposed in Maine. In California, there have been two law suits against physicians for failing to report child abuse. Based upon the legal doctrine of "negligence per se," one case has been settled out of court for nearly one million dollars. The second case is still pending, but may establish a legal precedent.

Five states (including neighboring New Hampshire) have gone beyond selecting specific professions to report by law and include "any person" as one who must report. Other states have revised their statutes to require specific professions to report, e.g., teachers, social workers, nurses, attorneys, clergymen, law enforcement officers, psychologists, operators of child care facilities. The Department of Health and Welfare is considering legislation that would broaden the existing law and the possibility of approaching the legislature with a new proposal.

The Department of Health and Welfare is the agency mandated to investigate reports of child abuse in Maine. It offers child protective services to more than 1700 children annually in response to complaints of neglect and abuse. It is estimated that about ten percent of these children have experienced physical abuse.

Physicians may not refer because of a questionable diagnosis. If a parent is denying any involvement, it is a particularly difficult decision to refer. Another reason for reluctance to report may be concern over referring such a complex matter to a bureaucracy where there is an unknown as to what happens to a family.

It is estimated that of the children who are referred and where the referral is valid, fewer than twenty percent reach a court for legal action.

Trained staff have as a first priority to ameliorate conditions that contribute to abuse while maintaining the child(ren) in the home. Legal action is taken as a last resort. When legal action takes place and the child enters the Department's custody, the first priority is to restore the child to his own family. Adoption and long-term foster care are secondary and tertiary objectives for any child in the Department's custody.

A range of services are employed to correct abusive situations including counseling, homemaker services, protective day care, temporary voluntary foster care, etc.

The following format is suggested for reporting child abuse:

A) Copy to the Director, Division of Child Wel-

†Child Protective Services Consultant, Maine Department of Health and Welfare.

*Absence of evidence is not evidence of absence . . . anon.

fare, Department of Health and Welfare,
Augusta, Maine 04330.

B) Copy to County Attorney.

C) I have reasonable cause to believe that (*Name of Child*) has had physical injury or injuries inflicted by other than accidental means. The child, born (*birthdate*), is the child of (*parent(s) name(s)*) of (*address*), (*telephone*).

D) Extent of injuries: (statement or attached medical report).

E) Treatment (statement or attached report).

F) Impressions on parents (not necessarily medical).

G) Do parents know a referral has been made?

Upon receipt of a referral, the County Attorney will be contacted by our staff to determine a plan of action.

Referrals may be made directly to regional offices in emergency situations and in some emergencies the local law enforcement agency may need to be involved.

Regional offices in counties are as follows:

York-Cumberland

Department of Health & Welfare
509 Forest Avenue, Portland, Maine
774-4581, Toll free — 800-482-7520

*Androscoggin, Franklin
and Oxford*

Department of Health & Welfare
179 Lisbon Street, Lewiston, Maine
783-9151, Toll free — 800-482-7517

*Sagadahoc, Lincoln, Waldo
and Knox*

Department of Health & Welfare
1 Park Drive, Rockland, Maine
594-8476, Toll free — 800-432-7802

Kennebec and Somerset

Department of Health & Welfare
11 Weston St., Augusta, Maine
289-2851
Skowhegan Branch 474-5551

Penobscot and Piscataquis

Department of Health & Welfare
117 Broadway, Bangor, Maine
947-0511, Toll Free — 800-432-7825

Hancock

Department of Health & Welfare
83 High Street, Ellsworth, Maine
667-5361, Toll Free — 800-432-7823

Washington

Department of Health & Welfare
Main Street, Machias, Maine
255-3366, Toll Free — 800-432-7846

Aroostook

Department of Health & Welfare
Houlton Trust Co. Bldg., Houlton, Maine
532-6504
Department of Health & Welfare
Caribou, Drawer T., Caribou, Maine
493-3361

NEWS FROM BLUE CROSS AND BLUE SHIELD — *Continued from Page 147*

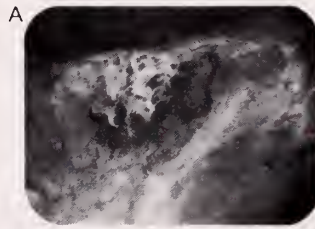
Broadcasting Network to develop three, locally produced films to follow three segments of the "Killers" series on Public Television.

Connard concluded in his report that "our (the Maine Blue Cross and Blue Shield) Board, strengthened by more input from consumer councils, our proven record of administrative efficiency and integrity, and our sound financial position, coupled

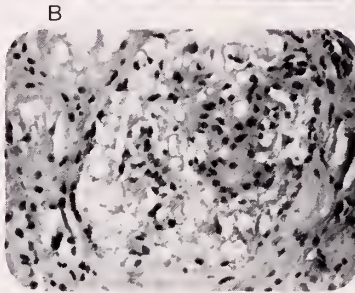
with ever increasing public confidence, will be strong assets as we enter into the active and challenging months ahead."

A copy of the 1973 Maine Blue Cross and Blue Shield Annual Report can be obtained by contacting the Communications Department, Maine Blue Cross and Blue Shield, 110 Free Street, Portland, Maine 04101.

What's wrong with this "patient"?



NOTE:
a variety of typical diagnostic
signs from three patients are
combined



Supplementary Vitamins in Chronic Disease Therapy

Diet, alone or in association with oral hypoglycemics or insulin, can usually lower blood sugar. But high blood sugar is only part of the diabetic patient's problem. Because if he fails to adhere to the prescribed diet and limits his diet too strictly, vitamin deficiency may result. In fact, any patient with chronic disease, poor diet and insufficient appetite — including the geriatric patient — may be heir to vitamin deficiency.

Therapeutic BeroCCA Tablets, when indicated, can supplement inadequate dietary supplies of essential B-complex and C vitamins in prolonged or wasting diseases. The 500 mg vitamin C in each tablet can help make certain the patient is getting an adequate supply of this agent, a substance involved in tissue repair and collagen formation, among other actions.

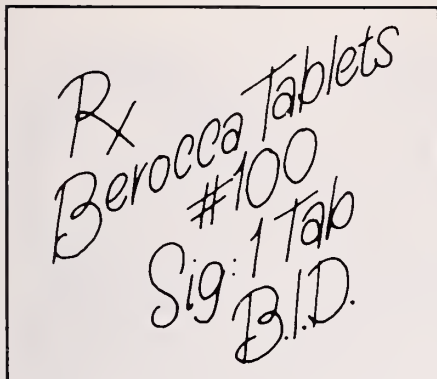
When nutritional
supplementation is indicated
in chronic disease

BEROCCA[®] TABLETS IS THERAPY

With balanced, high potency
vitamin B-complex and 500 mg vitamin C
Virtually no aftertaste or unpleasant odor
Low priced Rx formula

**Diagnosis appears on next page.*

*Please see next page for a summary of
product information.*



DIAGNOSIS: Certain manifestations of diabetes mellitus are revealed in these photographs: (A) fundus shows neovascularization and marked retinal scarring (male, age 23); (B) biopsy of kidney shows early diabetic intercapillary glomerulosclerosis (male, age 35); (C) photos 1 & 2 show edema and loss of the plantar arch (female, age 59); (D) lateral x-ray (same patient) shows dropped arch and hypertrophic and destructive changes of tarsal and metatarsal joints (Charcot's arthropathy); (E) AP confirms hypertrophic and destructive changes in (D).

Please see complete product information, a summary of which follows:

Each Berocca Tablet contains:

Thiamine mononitrate	
(Vitamin B ₁)	15 mg
Riboflavin (Vitamin B ₂)	15 mg
Pyridoxine HCl (Vitamin B ₆)	5 mg
Niacinamide	100 mg
Calcium pantothenate	20 mg
Cyanocobalamin (Vitamin B ₁₂)	5 mcg
Folic acid	0.5 mg
Ascorbic acid (Vitamin C)	500 mg

Indications: Nutritional supplementation in conditions in which water-soluble vitamins are required prophylactically or therapeutically.

Warning: Not intended for treatment of pernicious anemia or other primary or secondary anemias. Neurologic involvement may develop or progress, despite temporary remission of anemia, in patients with pernicious anemia who receive more than 0.1 mg of folic acid per day and who are inadequately treated with vitamin B₁₂.

Dosage: 1 or 2 tablets daily, as indicated by clinical need.

Available: In bottles of 100.



ROCHE LABORATORIES
Division of Hoffmann-La Roche Inc.
Nutley, New Jersey 07110

News, Notes and Announcements

Summer Programs at Colby College, 1974

*The medical programs have a little star at the left.

June 15-August 23

*29th Annual Lancaster Course in Ophthalmology
June 18-21

Maine Methodist Conference

June 22

Annual Meeting, Maine Historical Society

July 9-13

*Topics in Clinical Hematology

July 14-18

*Cancer Treatment Seminar

July 15-16

21st Annual Estate Planning and Tax Institute

July 23-26

*4th Annual Seminar in Surgical Techniques

July 27-28

4th Annual Show, Water-Oak Gem and Mineral Society

July 28-31

*5th Annual Seminar in Neurosurgical Techniques

For further information write to:

R. H. KANY

Director of Summer and Special Programs
Colby College

Waterville, Maine 04901

Pulmonary Disease

August 25-29, 1974. First Annual Seminar, Topics in Pulmonary Disease. National faculty including Barry Fanburg, M.D., Thomas Petty, M.D., Gareth M. Green, M.D., and more. Twenty-one hours of Category I credit available. Colby College/Thayer Hospital, Waterville, Maine.

Inquiries to R. H. Kany, Director, Special Programs, Colby College, Waterville, Maine 04901.

County Society Notes

KENNEBEC

A meeting of the Kennebec County Medical Association was held at the Jefferson restaurant in Waterville, Maine on February 21, 1974.

The meeting was called to order by the President, Dr. William E. Schumacher. Minutes of the previous meeting were read and accepted.

Communication from Dr. Woodcock regarding cooperation with the Maine Bar Association was summarized and reported that the matter is still under further consideration.

Credentials of Dr. Heatly Sebring were read into the record. The joint meeting of the Australian Medical Association and American Medical Association coming up in Australia was also mentioned.

There was no new business introduced.

The scientific program was presented by Dr. Paul J. Beisswenger who discussed the problem of hypoglycemia.

The meeting adjourned at 9:30 p.m.

JOSEPH J. HIEBEL, M.D., *Secretary pro tem*

ANDROSCOGGIN

The meeting of the Androscoggin County Medical Association was held at Steckino's Restaurant on Thursday, February 21, 1974. The meeting was called to order by Dr. Gerard L. Morin, President, at 8:00 p.m., with 40 members and guests present.

The minutes of the last meeting were read and accepted. A number of letters to the Association from the A.M.A., the Maine Medical Association and other sources were reviewed by the Secretary. The excellent newsletter dealing with the current legislative session, as reviewed by the Executive Committee of this area was briefly presented to the membership. Dr. Paul A. Fichtner's letter of January 10, 1974 was read to the membership, and by hand vote, 35 of the 35 members present indicated their approval of working for repeal of the Bennett Amendment. The membership was appraised of the discussion and action taken at the December interim meeting of the House of Delegates and the January meeting of the Executive Committee of the Maine Medical Association.

The applications for membership, approved by the Credentials Committee and Councilors were presented for Drs. Noel C. Goodman and Sawyer E. Medbury. Their applications were moved and seconded, and both physicians were then welcomed

to the membership of the Androscoggin County and Maine Medical Associations.

Dr. Charles W. Steele discussed a recent meeting of the Maine Medical Association Insurance Committee and the request of the State Department of Health and Welfare for implementation of a Statewide uniform fee schedule.

Dr. Louis N. Fishman, Vice-President and Program Chairman, introduced Dr. Robert William Coon and Mrs. Coon. Dr. Coon is Assistant Chancellor for Health Science Education at the University of Maine, and comes to the University of Maine after a long association with the University of Vermont School of Medicine where he was professor and chairman of the Department of Pathology. Dr. Coon presented a comprehensive discussion of the future of medical education, undergraduate, graduate and postgraduate in the State of Maine. Following an enlightening presentation, Dr. Coon answered numerous questions regarding the proposed Medical School for Maine, and the continued association of our State with the State of Vermont in medical education for Maine residents.

There being no other business, the meeting was adjourned at 9:45 p.m.

RICHARD M. SWENGEL, M.D., *Secretary*

Letters to the Editor

To the Editor:

With the expiration of Federal controls, there is a real possibility that physician fees, hospital charges and other health costs, which have risen substantially faster than the overall consumer price index during recent years, could now skyrocket.

As you may know, the President requested an extension of Federal controls on prices and wages in the health care field, but Congress failed to enact this proposal. Health care industry representatives reportedly were very instrumental in convincing Congressional members that the controls should be allowed to expire. This places a special obligation on the health care industry to protect the public.

To help avoid further adverse impact on the citizens of your area, I urge you to work with your membership in a concerted, voluntary effort to exercise great restraint in determining that increases in physician fees and other charges for health and medical services are justified and to keep increases which do occur as low as possible.

I also have recommended to the New England governors that they consider prompt action, through rate setting laws or other legislative or regulatory approaches, to help protect consumers in this region.

I would be interested in receiving any comments you care to make on the foregoing and, particularly, information on specific actions your association may take in this regard.

ROBERT FULTON
Regional Director
Department of Health, Education,
and Welfare
John F. Kennedy Federal Building
Government Center
Boston, Mass. 02203

To the Editor:

SUBJECT: Economic Controls

With the expiration of the Economic Stabilization Program on

April 30, medical associations have an important role to play in the effort to avert unwarranted fee increases. Our success in this effort will be influential in determining future Congressional action on economic controls.

In the April 15 issue of *American Medical News*, the AMA

- Urged physicians to view the lifting of controls realistically, in the light of the current economic and political situation, and to exercise restraint on fee increases.

- Informed the President of the United States that a continuation of controls on physicians would be unjust and stated the belief that physicians would show voluntary restraint.

- Announced an informational program to help physicians make equitable decisions about their fees.

The first phase of the informational program was printed in the April 29 issue of *American Medical News*. Further statements and an editorial were published in the May 6 issue. This is "interim" material, intended to provide the physician with some guidance between the ending of controls and the publication of detailed regional data on the inflation rate and practice costs. This data will begin to be available in June.

The goal of this program is to help the physician make decisions on rising costs, both in his practice and in his personal life. It urges increased productivity and management efficiencies. In some cases, where federal controls have resulted in inequities and severe personal loss, immediate fee adjustments will be necessary.

I urge you to take whatever steps are necessary to inform your membership of the need for voluntary restraint at this time, and to inform the public through local news media of your action.

ERNEST B. HOWARD, M.D.
Executive Vice President
American Medical Association
535 North Dearborn Street
Chicago, Ill. 60610



The Journal of the Maine Medical Association

Volume Sixty-five

Brunswick, Maine, July 1974

Number 7

Plan of the Maine Medical Association for a Program of Survey for Accreditation of Institutions and Organizations With Continuing Medical Education Programs of Local Scope and Focus

RICHARD T. CHAMBERLIN, M.D.

The House of Delegates of the Maine Medical Association voted in June of 1973 to require that all physicians who wish to maintain their membership in the medical society must report his own participation in continuing medical education activities each year. The committee also recognized that there are a limited number of continuing medical education programs in the State of Maine which have been accredited. Because of this, the committee has developed an accrediting mechanism for local programs hoping that eventually all physicians in the State will have ready access to accredited programs. The following is a description of the plan for accreditation and the committee invites all hospitals and voluntary health organizations to apply for a survey for accreditation. The committee feels that it would be helpful to use the final eight points of the accreditation plan as guidelines in the decision-making process about applying for such a survey.

This document will serve as an outline for the plan which the Maine Medical Association wishes to plan and implement and will serve as part of that society's application to become an accrediting body for institutions and organizations which provide local continuing medical education programs.

The Maine Medical Association wishes to conduct a voluntary accreditation program within the State of Maine for community hospitals and other local institutions and organizations providing continuing education for physicians on hospital staffs and in local communities.

The Maine Medical Association plans to focus its accreditation program, if approved by the AMA Council on Medical Education, upon the following categories of institutions and organizations:

1. Local hospitals which have continuing medical education activities limited to hospital staff and physicians in the local community.
2. Medical organizations which do not have national scope, e.g., county or other local societies.
3. Local units of voluntary health organizations

not under national administration for their continuing medical education.

4. Other organizations and institutions which sponsor or promote continuing education for physicians, essentially local in nature, appropriate to the needs of the profession.

If the Maine Medical Association produces its own continuing medical education program, it would expect to seek accreditation from the AMA Council on Medical Education and would not plan to accredit itself for this activity unless its accrediting body and its programming body (producing CME "courses") are structured totally separate from one another.

The Maine Medical Association is aware of all of the details in the *AMA Essentials of Approved Programs in Continuing Medical Education* and expects to use these standards in its own accreditation program. In this way, it will avoid a double standard and will use the same yardstick and guidelines for all local organizations and institutions which it surveys for accreditation. There are sixty-two hospitals as well as other institutions and organizations

present in the State of Maine although we cannot, at this time, estimate how many of them now have, or in the future could have, adequate continuing medical education programs.

We shall prepare a list of potential surveyors to be used in our accreditation system. In this list, we expect to include hospital directors of medical education, specialty society experts in this field and voluntary health organization individuals with knowledge and experience in continuing medical education.

We now have an Education Committee with members representing the practicing physician, specialty societies, medical schools, directors of medical education, etc.

We plan to have a budget specifically earmarked for an accreditation program in continuing medical education. Income to provide this budget may come from many sources. Much of it will probably come from fees charged applicant hospitals and other local organizations which desire surveys. Such charges would be designed to cover the actual cost of the surveys and some in-house overhead expenses. Other funds are likely to come from other sources including pharmaceutical firms, educational foundations and the society treasury. Staff assistance will be provided by the existing state society staff initially with possible additions to the staff if necessary, depending upon the volume of surveys in the future.

Our Education Committee will conduct the accreditation program either directly or through a subcommittee set up to be a review committee. The Education Committee and the review committee, both, will stand ready to give consultation advice to any hospital or other institution or organization desiring to establish a continuing medical education program based upon accepted Essentials.

The principal objective of our accreditation program will be to document and identify programs of continuing medical education in Maine which meet the *Essentials of Approved Programs in Continuing Medical Education*. We also believe that, if such accredited programs are based on actual and determined educational needs of physicians that the quality of medical care in Maine can be maintained at a high level.

We will have a mechanism to allow any institution or organization which is dissatisfied with its survey or accreditation action to have a means of appeal through our review committee, Education Committee, and Board of Trustees. Any institution which is denied accreditation shall have the reasons for such non-accreditation provided to it. These reasons in general will also need to conform to the Essentials.

We expect to be in a position to assist other state medical societies if they should wish to set up their own programs of accreditation once we have gained experience in implementing our own program.

While we have no current plans to do so, we can anticipate that some institutions or organizations accredited by our state society, through the Education Committee, will wish to have a certificate, noting that it has been accredited. We expect that we might need to develop such a certificate.

In implementing our accrediting system and prior to carrying out any survey, we would screen the institution or organization, seeking the survey to make certain that it could assure us that it did, indeed, have:

1. Adequate qualified leadership and a strong institutional commitment in favor of continuing education.
2. A written set of objectives to indicate what its continuing education program hopes to accomplish to improve physician competence and patient care.
3. A realistic budget.
4. A competent teaching staff.
5. A curriculum of suitable breadth and depth for the institution's patient mix.
6. Suitable participative educational methods.
7. Adequate facilities for continuing education with suitable audio-visual aids.
8. Some method of audit or quality of care evaluation to determine if the continuing education program for physicians had accomplished its goals.

If you have any questions, please call Richard T. Chamberlin, M.D., Chairman, Committee on Continuing Medical Education, Thayer Hospital, Waterville, Maine 04901, Tel.: 873-0621, Ext. 350.

Doctors Save Lives by Telephone

JOHN G. BELLOW, M.D., Ph.D.*

MediPhone, an innovative new medical information and consultation service, is helping the nation's doctors save lives and treat patients more effectively. Twenty-four hours a day, seven days a week, MediPhone responds to calls from doctors who are confronted with perplexing medical problems or patients who have failed to respond to treatment.

This nationwide physicians' telephone consultation service immediately puts the inquiring physician in touch with an expert in a medical specialty. The MediPhone service offers the best in consultation and breaks down distance and time barriers, all at a fraction of the usual consultation fee.

The Chicago-based MediPhone program demonstrates its life-saving potential almost daily. Recently a doctor in a small northern Illinois community was called to treat a patient who had been bitten by the deadly brown recluse spider. This species has only recently migrated from the South to the northern parts of the country. It requires a minimal temperature of 40° F to survive. Thus, in colder climates it may be found in such places as closets and basements. The physician who called MediPhone had never encountered a similar case and requested information on the treatment of the bite of this poisonous spider. Time was critical; delay would cause much suffering and even endanger the patient's life.

The attending physician immediately dialed the nationwide MediPhone physician's consultation service telephone number: (312) 782-7888. Moments later he was in consultation with an expert toxicologist at The University of Texas Medical Center in San Antonio. The expert informed the calling doctor that the modern management of the recluse spider bite required a wide excision since the bites are multiple, and the administration of large doses of cortisone. Within hours, the patient had been treated according to the plan outlined by the consultant. The immediate application of these life-saving measures undoubtedly saved the patient from a great deal of pain and possible death.

In another emergency, a farmer in Kansas fell off his tractor; while his wife and several farm hands stood helplessly by, a steel blade of the rotary machine severed the farmer's right arm about one inch above the wrist. The farm workers rushed the farmer and his severed hand to the nearby family physician, who in turn called MediPhone. MediPhone connected the family physician with a sur-

geon at a nearby university trauma center. The patient was immediately taken to the trauma center where the severed hand was reattached by a plastic surgeon. Two weeks later the patient was able to move his hand and wrist. Although the hand has not yet recovered its sensory functions, complete recovery is still possible.

MediPhone also performs educational and consultative services for non-emergency calls. A doctor in Yuma, Arizona, recently called MediPhone to obtain advice and recommendations from a specialist in lung diseases. For more than a week the doctor had been treating without success the 52-year-old proprietor of a local furniture store. At first the man thought he had a cold, but he developed a symptom complex consisting of 102° F temperature, cough, and pain in the chest. X-rays disclosed unfamiliar patches in both lungs. The physician was baffled by the X-rays so he called on MediPhone's resources.

The practitioner learned from MediPhone's lung specialist in New York that the condition was undoubtedly a mycoplasma pneumonia caused by a minute bacterium. Fortunately, the disease responds quickly and favorably to antibiotics such as tetracyclines and erythromycin. The patient responded to the proposed treatment and made a speedy recovery.

MediPhone was originated in 1972 by its director, Dr. John G. Bellows, a Chicago eye specialist. The service is sponsored by the nonprofit American Society of Contemporary Medicine and Surgery, a 7,000-member physician organization whose purpose is to disseminate the latest medical information to doctors. Among the leaders of the Society and MediPhone are the chairman, Dr. Morris Fishbein, medical author and former editor of the *Journal of the American Medical Association*, and the president, Dr. Michael E. DeBakey, leading heart surgeon. The more than 600 consultants are located in some 60 university medical centers throughout the country. These include deans of medical schools, heads of departments, and outstanding specialists in all fields of medicine and surgery.

The Society and MediPhone are approved by the American Medical Association for continuing medical education. Therefore, the physician who uses MediPhone not only obtains medical information and consultation, but he also receives a certificate for credit hours in continuing medical education.

"Our main motive," Dr. Bellows explains, "is to help doctors practicing in an area where they have

Continued on Page 167

*University of Health Sciences/The Chicago Medical School, Chicago, Illinois.

All correspondence to: John G. Bellows, M.D., Ph.D., Thirty North Michigan Avenue, Chicago, Illinois 60602.

PSRO in Maine

Pine Tree Organization for Professional Standards Review . . . assuring quality care for Maine

RICHARD T. CHAMBERLIN, M.D.

On October 30, 1972, the President of the United States signed Public Law 92-603 which may be cited as "The Social Security Amendments of 1972." Section 249F of Title II of this law provides the statutory basis for the formation of Professional Standards Review Organizations.

Although many provisions of this portion of Public Law 92-603 are controversial and are hotly debated, the House of Delegates of the Maine Medical Association in June of 1973 did adopt resolutions directing qualified compliance with the statute. The qualifications included the provisions that the statute should allow (a) freedom of choice between patient and physician, (b) freedom of choice by physician of the modes of therapy he may use, (c) ability to maintain confidentiality of the record of any patient's illness, and (d) liberal consideration for the welfare of the patient. The Executive Committee of the Maine Medical Association studied these points and following their favorable report on these issues, the House of Delegates voted in December of 1973 to reaffirm its position of qualified compliance with the statute.

At the direction of the Executive Committee of the Maine Medical Association, the Chairman of the Peer Review Committee of the Maine Medical Association has, working with others, been instrumental in the work leading to the incorporation of the Pine Tree Organization for Professional Standards Review, Inc. on May 8, 1974.

Membership in this Maine Organization is free to all licensed Maine physicians, providing them with a significant role in the shaping of the future of health care in Maine. By participation in this Maine organization, you will be adding your voice to those that will be establishing the necessary standards and criteria for determining the quality of care given to Maine people.

The primary emphasis of the Pine Tree Organization for Professional Standards Review is on the assurance of quality of care. To determine the quality of care, the Pine Tree Organization will build upon the existing Peer Review Committees, using their experience and knowledge of local medical practices. The standards and criteria, which will be used to determine the necessity of care, the quality of care provided and the proper setting for the required care, will be established according to Maine physicians' practices, thereby assuring that the decisions made on the quality of care provided are in the best interest of Maine patients and physicians.

The governing body of the Pine Tree Organization is composed primarily of Maine physicians. The eleven member Board of Directors consists of five M.D.'s, three D.O.'s and three non-physician members representing the three major third-party payors in Maine. During the early stages of the PTOPSR, it will be working on plans to develop:

- * a means of evaluating the effectiveness of the hospital Utilization Review Committees
- * a methodology for developing and adopting criteria and standards for the review, and
- * a plan for integrating professional standards review into continuing medical education.

The Pine Tree Organization for Professional Standards Review has received the endorsement of the Maine Medical Association and the Maine Osteopathic Association.

The Board of Directors of the Pine Tree Organization invites all physicians licensed to practice in Maine to join the organization. A membership application follows. Please complete it and forward it to Pine Tree Organization for Professional Standards Review, Inc. c/o Richard T. Chamberlin, M.D., President, Thayer Hospital, Waterville, Maine 04901.

PINE TREE ORGANIZATION FOR PROFESSIONAL STANDARDS REVIEW, INC.

MEMBERSHIP APPLICATION

I, _____, presently admitted to practice medicine in the State of Maine, hereby apply for membership in the Pine Tree Organization for Professional Standards Review, Inc.

I understand that there are no financial commitments (i.e. dues) as a condition to my membership and that my membership shall continue as long as I am licensed to practice medicine in the State of Maine or until I voluntarily elect to resign. Resignation may be made at any time in writing directed to the Clerk of Pine Tree Organization for Professional Standards Review, Inc.

.....
Date

.....
Name

.....
Street

.....
City

.....
County

The Doctor's Agency

Endorsed by the Maine Medical Association

NOYES & CHAPMAN
General Insurance

One Monument Square
Portland, Maine
772-2841

SPECIALIST IN MALPRACTICE INSURANCE

Serving Maine doctors in all forms of insurance for over 100 years

LAWRENCE D. CHAPMAN

EDWARD D. NOYES III

Dx: Duodenal ulcer...

Rx: Maalox®

Why do people develop duodenal ulcers?

No one knows with certainty...yet. Competitiveness?

Perhaps. Stress? Aggressiveness? All probably play their parts.

But one thing is certain: in a disease characterized by a gastric-acid output that may be four times normal, antacid therapy is a vital adjunct to effective clinical management.

That's where Maalox comes in. It's America's number one antacid. And has been for years. The reasons?

Maalox does precisely what an antacid, ideally, is intended to do. It works fast. It neutralizes effectively. It doesn't constipate. And its pleasant taste is well tolerated—definitely a major consideration in long-term therapy.

In any ulcer regimen, as you know, there are many factors to consider. But the inclusion of Maalox, as the antacid of choice, gives you and your patient one less thing to worry about.

Maalox® Suspension

(12 fl. oz. and 5 fl. oz. [plastic bottle]).

Maalox® No. 1 Tablets (0.4 Gm.)

—no sugar and low in sodium.

Maalox® No. 2 Tablets (0.8 Gm.)

—the "chew" tablet with double antacid action.

Maalox®

(a balanced combination of
magnesium and aluminum hydroxides)

the number one antacid



WILLIAM H. RORER, INC.
Fort Washington, Pa. 19034

Family Practice Residency Training in Central Maine

A. ROBERT CRAWFORD, JR.*

ESSENCE OF ARTICLE

A group of varied people pooled resources and structured a program in response to their perception of a Statewide need. Traditional patterns of residency programs were modified to meet that need and to achieve an approved operational status.

BACKGROUND

The State of Maine has much of its population based in rural settings. The rural areas of the State are faced with aging physicians and/or inability to attract physicians or health care specialists into their communities to provide adequate health care delivery systems.

The State of Maine does not have a medical school. Physicians must be attracted from other states. The communities in Maine face two major obstacles in attempting to attract physicians to establish their practice in Maine. One major obstacle is finances. Maine is one of the poorer states in the country and therefore must compete on other incentives such as rural living, clean environment, and a slower pace of life. Another obstacle is the lack of a medical school within the State. Recent studies on where physicians practice suggest that about 70% will set up practice in the community in which they complete their residency training.

BEGINNING

Early in 1972, several physicians and health care professionals, aware of the medical needs of the State of Maine began exploring ways in which this problem might be resolved. The individuals represented several hospitals in Central Maine and Medical Care Development, Inc., an organization dedicated to improving health care delivery in the State of Maine. Continued discussion with educators and interested public citizens produced the concept of establishing a Family Practice Residency Program as an effective way to resolve some of the health care needs of the people of the State of Maine.

ORGANIZATION

A Steering Committee was appointed to legitimize and direct efforts during the first year. A physician on the staff of Medical Care Development,

Incorporated was temporarily loaned to be Project Director. Five hospitals agreed to participate in the formulation of the Residency Program. Establishing a fully accredited educational program in medicine and specifically in Family Practice posed some unique problems for the committee to resolve. Without a medical school in the State, faculty resources have had to be identified from community practices, hospitals, and universities. There was no on-going Residency Program upon which to draw assistance and resources. This situation provided an opportunity to develop a faculty group instead of choosing from an existing pool as is available in a medical school.

GOALS

The Steering Committee delineated primary and secondary goals for the program.

A. Primary:

1. To increase the number of physicians interested in, aware of, and likely to practice primary care medicine, particularly in rural areas of Maine.
2. To bring academic responsibilities and student contact to the largest possible number of practicing physicians in Maine.
3. To make maximum use of all local resources to these ends, including the Veterans Administration, which in the State of Maine represents a particularly strong resource.
4. To work towards a medical awareness of the population of the whole State and a concern for its health problems as a larger community.

2. Secondary:

1. To provide a cooperative in-training experience for a variety of allied health persons and physicians.
2. To create a postgraduate training facility to continue and support the activities of the projected medical school for the State of Maine.

PROGRAM CONSTRUCTION

An early information resource was a workshop sponsored by the American Academy of Family Practice on the establishment of Residency Programs. The workshop covered information concerning the Family Practice Unit, an integral part

*Administrative Director, Central Maine Family Practice Residency, 12 East Chestnut St., Augusta, Maine 04330.

of the Family Practice Residency Program. The following points were identified:

1. A Family Practice Unit simulating the private practice of a family physician as mandatory.
2. Residents must maintain continuous care of families throughout their three years of their program.
3. Model units seem to need long term financial support.

An Interactive Television Network was discussed. A network system could be developed to include the five participating hospitals. Such a system would provide two-way video connection between all hospitals. This would be an excellent communication system and would minimize destructive effects of the geographic dispersal of the program by permitting all residents and full-time faculty to participate in daily family practice conferences. The committee decided to recommend that this concept be written up for funding for utilization in this project.

An important view of the Steering Committee is that individuals practicing together in groups have a greater opportunity to keep themselves up to date in an academic sense, can offer medical care more efficiently, and can offer a greater variety of diagnostic and therapeutic services than can be provided by independent practitioners. Every facet of the residency program therefore must be consciously designed to teach, encourage, and facilitate health care as a group effort. The education and optimum use of a variety of paramedical helpers is also an essential part of learning to be an excellent and temporary physician. A comfortable understanding of the problems and capabilities of interactive television, and the computer, both as instructional tools and resource instruments are also necessary in preparing family practice residents for their practice.

A Family Practice Residency Program so structured also liberates the family practice resident from competition with residents in more established and traditional specialty training. It offers the family practice residents the clear privilege of continuing responsibility for his own patients during periods of hospitalization.

A Medical Advisory Committee was established replacing the Steering Committee to begin designing a curriculum identifying faculty to teach in the program. The Medical Advisory Committee was comprised of representatives of each of the five hospitals, a coordinator of Medical Care Development, Inc., a representative of the Maine Chapter of the American Academy of Family Practice, Director of the Family Practice Institute, Director of the Family Practice Residency Program, a family practice resident, and an osteopath from the Maine Osteopathic Hospital in Waterville.

Additional problems that were dealt with by the committee include establishment of a budget and fi-

nancial resources to operate the program for at least two years. Policies and function of the Model Practice Unit needed to be defined. Education of a community, both lay and professional, needed to be developed. An application for accreditation needed to be filed and recruitment of residents for the first year begun. These problems required many hours of deliberation and coordination to resolve.

RESIDENCY ROTATIONS

The residency rotation for each year is listed below.

FIRST YEAR:

Model Practice Unit

1 afternoon per week

Medicine

CMG or Thayer — 2 months

Togus — 2 months

Pediatrics

Augusta General — 4 months

Surgery

Togus and/or Augusta General — 2 months

Psychiatry

St. Mary's — 2 months

Eight months full time in Augusta; daily trip to Waterville (30 min.) or Lewiston (45 min.) required for 4 months. Togus trip (12 min.)

SECOND YEAR:

Model Practice Unit

3 afternoons or evenings per week

OB-GYN — 3 months

Medicine

Togus — 4 months

Emergency Division

CMG — 2 months

Psychiatry

St. Mary's — 2 months

Elective

1 month

Four to five months full time in Augusta — daily trip to Lewiston or Waterville — 7 to 8 months — according to elective rotation.

THIRD YEAR:

Model Practice Unit

5 afternoons or evenings per week

Medicine

CMG or Thayer — 2 months

Togus — 2 months

Rural Preceptorship

2 months

Community Medicine

Augusta area — 4 months

Epidermiology research


State Laboratory

RMP

Continued on Page 161

Integument!

Our skin—the human integument—covers us, defines us, protects us. But skin is subject to cuts, burns, abrasions. And infections. Neosporin Ointment fights infection by providing broad antibacterial action against susceptible skin invaders. It contains antibiotics that are rarely used systemically, reducing the risk of sensitization.



INDICATIONS: *Therapeutically*, used as an adjunct to appropriate systemic therapy for topical infections, primary or secondary, due to susceptible organisms, as in: • infected burns, skin grafts, surgical incisions, otitis externa • primary pyodermas (impetigo, ecthyma, sycosis vulgaris, paronychia) • secondarily infected dermatoses (eczema, herpes, and seborrheic dermatitis) • traumatic lesions, inflamed or suppurating as a result of bacterial infection.

Prophylactically, the ointment may be used to prevent bacterial contamination in burns, skin grafts, incisions, and other clean lesions. For abrasions, minor cuts and wounds accidentally incurred, its use may prevent the development of infection and permit wound healing.

CONTRAINDICATIONS: Not for use in the external ear canal if the eardrum is perforated. This product is contraindicated in those individuals who have shown hypersensitivity to any of the components.

PRECAUTION: As with other antibiotic preparations, prolonged use may result in overgrowth of nonsusceptible organisms and/or fungi. Appropriate measures should be taken if this occurs. Articles in the current medical literature indicate an increase in the prevalence of persons allergic to neomycin. The possibility of such a reaction should be borne in mind.

Complete literature available on request from Professional Services Dept. PML.

NEOSPORIN[®] Ointment

(POLYMYXIN B-BACITRACIN-NEOMYCIN)

Each gram contains: Aerosporin[®] brand Polymyxin B Sulfate 5,000 units; zinc bacitracin 400 units; neomycin sulfate 5 mg. (equivalent to 3.5 mg. neomycin base); special white petrolatum q.s. In tubes of 1 oz. and ½ oz. and ½ oz. (approx.) foil packets.



Wellcome

Burroughs Wellcome Co.
Research Triangle Park
North Carolina 27709



The Antacid Analogy



Indications: Pro-Banthine is effective as adjunctive therapy in the treatment of peptic ulcer. Dosage must be adjusted to the individual.

Contraindications: Glaucoma, obstructive disease of the gastrointestinal tract, obstructive uropathy, intestinal atony, toxic megacolon, hiatal hernia associated with reflux esophagitis, or unstable cardiovascular adjustment in acute hemorrhage.

Warnings: Patients with severe cardiac disease should be given this medication with caution.

Fever and possibly heat stroke may occur due to anhidrosis.

In theory a curare-like action may occur, with loss of voluntary muscle

control. For such patients prompt and continuing artificial respiration should be applied until the drug effect has been exhausted.

Diarrhea in an ileostomy patient may indicate obstruction, and this possibility should be considered before administering Pro-Banthine.

Precautions: Since varying degrees of urinary hesitancy may be evidenced by elderly males with prostatic hypertrophy, such patients should be advised to micturate at the time of taking the medication.

Overdosage should be avoided in patients severely ill with ulcerative colitis.

Adverse Reactions: Varying degrees of drying of salivary secretions may

Therapeutic comparisons in peptic ulcer.

Antacids have only one mode of action to relieve ulcer pain...

Pro-Banthine[®] has four. brand of propantheline bromide

Antacids:

Antacids relieve ulcer pain by neutralizing gastric acid. This action is relatively short-lived and they have no other mode of action.

Pro-Banthine:

Pro-Banthine suppresses gastric acid secretion. The antisecretory properties of Pro-Banthine are well established. By effectively blocking vagotonic impulses Pro-Banthine suppresses gastric secretion to reduce both total and free acid.

Pro-Banthine helps relieve pain.

Pro-Banthine relieves ulcer pain by reducing gastric secretion and the motility and spasm of the gastrointestinal tract.

Pro-Banthine reduces acidity without subsequent acid rebound. The capacity of Pro-Banthine to reduce the secretion of total and free acid in the stomach has been demonstrated in scores of studies. None has demonstrated any significant evidence of acid rebound.

Pro-Banthine activity lasts about six hours. The effect of a single therapeutic dose (15 mg.) of Pro-Banthine lasts about six hours.* Pro-Banthine P.A.[®], the prolonged-acting form, is active from 8 to 12 hours. Thus Pro-Banthine may be used to suppress acid, spasm, and pain around the clock, even during the sleeping hours when antacids, to be effective, must be taken almost hourly.

*Innes, I.R., and Nickerson, M., in Goodman, L.S., and Gilman, A. (editors): The Pharmacological Basis of Therapeutics, ed. 4, New York, The Macmillan Company, 1970, p. 537.

Pro-Banthine complements and enhances the action of antacids.

SEARLE

Searle & Co.
San Juan, Puerto Rico 00936

Address medical inquiries to: G. D. Searle & Co.
Medical Department, Box 5110, Chicago, Ill. 60680

occur as well as mydriasis and blurred vision. In addition the following adverse reactions have been reported: nervousness, drowsiness, dizziness, insomnia, headache, loss of the sense of taste, nausea, vomiting, constipation, impotence and allergic dermatitis.

Dosage and Administration: The recommended daily dosage for adult oral therapy is one 15-mg. tablet with meals and two at bedtime. Subsequent adjustment to the patient's requirements and tolerance must be made.

Pro-Banthine P.A.—Each tablet of Pro-Banthine P.A. (propantheline bromide) contains 30 mg. of the drug in the form of sustained-release or

timed-release beads; on ingestion about half of the drug is released within an hour and the remainder continuously as earlier increments are metabolized. Thus the result is even, high-level anticholinergic activity maintained all day and all night in most patients with only two tablets daily. Some patients may require one tablet every eight hours.

The contraindications and precautions applicable to Pro-Banthine 15 mg. should be observed.

How Supplied: Pro-Banthine is supplied as tablets of 15 and 7.5 mg., as prolonged-acting tablets of 30 mg. and, for parenteral use, as serum-type vials of 30 mg.

Before prescribing, see complete prescribing information in SK&F literature or *PDR*. The following is a brief summary.

Indications: Edema associated with congestive heart failure, cirrhosis of the liver, the nephrotic syndrome; steroid-induced and idiopathic edema; edema resistant to other diuretic therapy. Also, mild to moderate hypertension.

Contraindications: Pre-existing elevated serum potassium. Hypersensitivity to either component. Continued use in progressive renal or hepatic dysfunction or developing hyperkalemia.

Warnings: Do not use dietary potassium supplements or potassium salts unless hypokalemia develops or dietary potassium intake is markedly impaired. Enteric-coated potassium salts may cause small bowel stenosis with or without ulceration. Hyperkalemia (> 5.4 mEq/L) has been reported in 4% of patients under 60 years, in 12% of patients over 60 years, and in less than 8% of patients overall. Rarely, cases have been associated with cardiac irregularities. Accordingly, check serum potassium during therapy, particularly in patients with suspected or confirmed renal insufficiency (e.g., elderly or diabetics). If hyperkalemia develops, substitute a thiazide alone. If spironolactone is used concomitantly with 'Dyazide', check serum potassium frequently — both can cause potassium retention and sometimes hyperkalemia. Two deaths have been reported in patients on such combined therapy (in one, recommended dosage was exceeded; in the other, serum electrolytes were not properly monitored). Observe patients on 'Dyazide' regularly for possible blood dyscrasias, liver damage or other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving Dyrenium (triamterene, SK&F). Rarely, leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with the thiazides. Watch for signs of impending coma in acutely ill cirrhotics. Thiazides are reported to cross the placental barrier and appear in breast milk. This may result in fetal or neonatal hyperbilirubinemia, thrombocytopenia, altered carbohydrate metabolism and possibly other adverse reactions that have occurred in the adult. When used during pregnancy or in women who might bear children, weigh potential benefits against possible hazards to fetus.

Precautions: Do periodic serum electrolyte and BUN determinations. Do periodic hematologic studies in cirrhotics with splenomegaly. Anti-hypertensive effects may be enhanced in post-sympathectomy patients. The following may occur: hyperuricemia and gout, reversible nitrogen retention, decreasing alkali reserve with possible metabolic acidosis, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), digitalis intoxication (in hypokalemia). Use cautiously in surgical patients. Concomitant use with antihypertensive agents may result in an additive hypotensive effect.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis; rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting (may indicate electrolyte imbalance), diarrhea, constipation, other gastrointestinal disturbances. Rarely, necrotizing vasculitis, paresthesias, icterus, pancreatitis, and xanthopsia have occurred with thiazides alone.

Supplied: Bottles and Single Unit Packages of 100 capsules.

SK&F CO.

Carolina, P.R. 00630

Subsidiary of SmithKline Corporation

THE MARATHON WINNER LOSES SERUM POTASSIUM

as a result of intensive physical training.*



MANY HYPERTENSIVE PATIENTS LOSE POTASSIUM[†]

from therapy with potassium-wasting diuretics.

DYAZIDE[®]

Trademark

Each capsule contains 50 mg. of Dyrenium[®] (brand of triamterene) and 25 mg. of hydrochlorothiazide.

SPARES THE HYPERTENSIVE PATIENT'S POTASSIUM AS IT LOWERS BLOOD PRESSURE.

*Serum Potassium Level Drops During Long-Term Exercise, *Medical Tribune*, July 4, 1973.

†No implication that 'Dyazide' is useful in preventing K⁺ loss in athletes is intended.

Health Welfare Dept.
Mental Health & Correction
Local Government or Health Dept.

Electives

2 months

Six to eight months full time in Augusta — daily trip to Lewiston or Waterville requires 2-4 months, depending upon elective rotation.

LOCATION:

Model Unit	Augusta
Central Maine General	Lewiston
Thayer Hospital	Waterville
Augusta General	Augusta
VA Hospital	Togus
St. Mary's General	Lewiston

MODEL PRACTICE UNIT

The Model Unit is housed in the building leased by one of the participating hospitals supporting the program. Within the building are housed the staff offices and the Model Practice. Physical capabilities permit expansion of the Residency Program to 18 physicians in training. The Unit is organized to operate as a Model Practice with preceptorship provided by three men in a family practice group.

NURSE ASSOCIATES

The program has an affiliation with the University of Maine in their training of Nurse Associates. The Model Unit accepts Nurse Associates for their field training and plans to retain two graduates as the nursing component for staffing of this operation. Having the Nurse Associate as part of our educational training permits the resident to learn how to utilize this type of professional in a practice situation as he begins to consider how he would use manpower in his own practice.

SIGNIFICANT OPPORTUNITIES WITHIN THE PROGRAM

The involvement of multiple community hospitals provides an opportunity for medical training outside of the referral center setting, which is not restricted to academic resources and the patient population of a single community. The presence of residents brings an academic stimulus in quality review to each of the institutions involved in the program. An opportunity is presented for a look at professional life away from a medical center at a time when the resident is still in training, and has not made his final choice of a location for his practice.

RESEARCH IN EDUCATIONAL TRAINING METHODS AS A PRIMARY OF INTEREST

A regionally organized residency will provide a needed laboratory for studying postgraduate medical education in areas of low population density. Experience with interactive television in Massachusetts suggests that this can significantly modify traditional patterns of both medical education and health care delivery. The program has applied for a telecommunication system to connect each of the five hospitals to permit the entire residency group to participate in seminars, lectures, and case presentations. This system will provide daily peer interaction despite geographic dispersal. A patient's problem can be communicated to his physician even when the physician is at another geographic location.

The program offers stimulus of academic responsibilities to physicians who do not practice in metropolitan hospitals. Faculty involvement in the program will stimulate continuing education for the practicing physician and thereby facilitating the possibility of medicine being practiced in the most current and effective style known.

SUMMARY

The potential impact of the program may be summarized by identifying the fundamental characteristics which are manifestations of its extremely broad focus:

1. It is interdisciplinary, including the traditional specialties of medicine, pediatrics, obstetrics, surgery, and psychiatry.
2. It is conducted by a consortium of hospitals each of which has repudiated overall control as a condition of participation.
3. The faculty includes both traditional medical specialists and generalists.
4. It recognizes the needs of both faculty and students: the teaching role of the student and the learning functions of teachers are underlined.
5. It teaches team health care delivery, developing cooperative efforts among physicians and allied health workers.
6. It recognizes medical skills in treatment but also the management skills needed to deliver health care effectively.
7. It identifies the individual but also the family and community in which he is embedded.
8. It defines health as more than the absence of diseases, manifesting a concern for the values and quality of life.

Rational Parenteral Vitamin Products

RUSSELL R. MILLER, Pharm.D., Ph.D.*

INDIVIDUAL VITAMINS

Vitamin A

Severe deficiencies of vitamin A are seldom observed as a single entity deficiency in the United States. Therefore, parenteral vitamin A (Aquasol A®) has little use.

Vitamin D

Parenteral ergocalciferol (vitamin D₂) may be useful in the treatment of familial phosphatemia, hypoparathyroidism, and refractory rickets when the oral route is unsatisfactory.

Vitamin E

Parenteral vitamin E is not commercially available since it has no use by this route.

Ascorbic Acid (Vitamin C)

Parenteral ascorbic acid is sometimes useful in severely traumatized or burned patients. However, a preparation of vitamin B complex with ascorbic acid is usually preferable to ascorbic acid alone since the B complex vitamins are usually deficient in patients with ascorbic acid deficiency.

Niacin

Niacin or niacinamide are seldom, if ever, indicated for parenteral administration.

Pantothenic Acid

A Recommended Daily Allowance (RDA) for pantothenic acid has not been established; its deficiency alone is an unlikely clinical occurrence. Dexpanthenol (Ilopan®), the alcohol derivative of this vitamin, has been promoted for the treatment of adynamic ileus but there is no convincing evidence that it is effective for this use.

Pyridoxine (Vitamin B₆)

When parenterally administered, this vitamin is useful in infants with epileptiform convulsions due to familial type pyridoxine deficiency.

Riboflavin (Vitamin B₂)

Riboflavin is not commercially available as a parenteral preparation since it has no use by this route.

*Dr. Miller is Principal Investigator of the "Program to Improve Pharmacy Services in the State of Maine," a joint project of the departments of pharmacy of the Maine Medical Center and the New England Medical Center Hospital. Funds for this program are provided by the Bingham Associates Fund. Correspondence concerning this article should be directed to Dr. Miller at Box 420, New England Medical Center Hospital, 171 Harrison Avenue, Boston, Massachusetts 02111.

Thiamine (Vitamin B₁)

Parenteral thiamine is useful in alcoholic neuropathy and neuritis of pregnancy. It should be given cautiously by the intravenous route since anaphylactoid reactions, a few of which were fatal, have occurred after intravenous administration of large amounts of thiamine in sensitive patients. However, intravenous thiamine may prevent irreversible brain damage in some alcoholic patients with Wernicke's encephalopathy caused by thiamine deficiency.

Cyanocobalamin (Vitamin B₁₂)

Parenteral cyanocobalamin is indicated in the treatment of pernicious anemia. The oral route should not be used for treating pernicious anemia because oral preparations of cyanocobalamin are unreliable for obtaining an adequate or sustained therapeutic response. Hydroxocobalamin, an analogue of cyanocobalamin, is equal to cyanocobalamin in hematopoietic activity. Because more of it is bound to blood proteins than cyanocobalamin, less is lost in the urine. Thus, it is retained in the body a little longer than cyanocobalamin. However, because of the dosages generally used, this is not an important clinical consideration.

Cyanocobalamin has no therapeutic value in treating any of the nonhematologic conditions for which it has been advocated (e.g., acute viral hepatitis, trigeminal neuralgia, multiple sclerosis, delayed growth, poor appetite, certain dermatologic and psychiatric disorders, allergies, aging, sterility, thyrotoxicosis, malnutrition).

Folic Acid

Folic acid is specific for the control of folate-deficiency megaloblastic anemias of infancy and pregnancy. It also is effective in the treatment of nutritional macrocytic anemia and most cases of tropical sprue or celiac disease, in which it frequently controls diarrhea. Since folic acid (Folvite®) is rapidly and completely absorbed when administered orally, parenteral administration of the sodium salt of folic acid (Folvite Solution®) is seldom indicated. However, folate sodium may be preferred when folate deficiency is caused by malabsorption rather than by intake of inadequate amounts. Some drugs (e.g., diphenylhydantoin) cause decreased absorption of folate.

Leucovorin calcium (folinate calcium) is the metabolically active form of folic acid. It is formed through the reduction of folic acid by the enzyme dihydrofolate reductase. Since leucovorin must be

given parenterally, folic acid is the preferred agent in nearly all folate-deficient patients. Leucovorin is indicated only in those rare instances where an individual who has severe liver damage or is taking certain drugs develops folic acid deficiency which does not respond to folic acid. Some drugs (e.g., methotrexate) may inhibit dihydrofolate reductase and in patients receiving these drugs leucovorin may be useful if folic acid is ineffective.

Vitamin K

In normal patients there is no established daily requirement for vitamin K, and it is improbable that an adult, even one on a deficient diet, will develop vitamin K deficiency. Therefore, none of the vitamin K compounds are included in parenteral multivitamin preparations. True vitamin K deficiency that predisposes the body to hemorrhagic complications is associated with many clinical situations, and parenteral vitamin K is often indicated for reversal of hypoprothrombinemia. Phytonadione (vitamin K₁, Aqua-Mephyton®) and menadiol sodium diphosphate (Synkayvite®) are two parenteral vitamin K preparations. Phytonadione is generally preferred for prevention and treatment of hemorrhagic disease of the newborn or for treatment of hypoprothrombinemia caused by overdosage of oral anticoagulants.

MULTIVITAMIN PREPARATIONS

M.V.I.® (USV Pharmaceutical Corporation)

This product is a combination of oil-soluble vitamins A, D₂, and E and the following water-soluble vitamins: ascorbic acid, thiamine, riboflavin, and pyridoxine. Since there is no evidence that a significant deficiency of the oil-soluble vitamins occurs in most hospitalized patients, the routine use of M.V.I. as a "multivitamin" additive to intravenous solutions is unjustifiable. Indeed, the frequent use of vitamin A or vitamin D may lead to acute or chronic toxicity.¹

Parenteral vitamins A, D, and E may be needed in long-term hyperalimentation or in other patients who are unable to ingest or absorb a normal diet for prolonged periods. In these rare instances, M.V.I. may be given in an intravenous solution every seven to ten days. Vitamin K, folic acid, and cyanocobalamin may also be indicated in such patients; they should be administered intramuscularly in separate injections.

Vitamin B Complex with Ascorbic Acid

One preparation of B complex vitamins with ascorbic acid (vitamin C) will satisfy nearly all needs for parenterally-administered multivitamins in hospitalized patients. Thiamine, riboflavin, pyridoxine,

niacinamide, and ascorbic acid may be depleted relatively rapidly, particularly in stress situations such as severe trauma, major surgery, or severe illness. Therefore, these vitamins are indicated in most patients who require parenteral feeding. The following parenteral preparations of vitamin B complex with ascorbic acid contain sufficient vitamins to meet an approximately fivefold increase in demands if administered once daily:

Berocca-C 500®

Solu-B with Ascorbic Acid®

Vi-Cert C 500®

One ampul of vitamin B complex with ascorbic acid should be added to only one intravenous solution per day (or less often); more frequent usage is seldom indicated.

The product Solu-B-Forte® provides excessive amounts of water-soluble vitamins; from 25 to 200 times the Recommended Daily Dietary Allowances² of thiamine, riboflavin, ascorbic acid, niacinamide, pyridoxine and sodium pantothenate are contained in each 10 ml vial.

Vitamin B Complex

Parenteral preparations containing B complex vitamins *without* ascorbic acid (Solu-B®) are seldom indicated. When deficiencies of the B complex vitamins occur, ascorbic acid is usually deficient, also. Thus, a preparation of vitamin B complex *with* ascorbic acid is nearly always preferable.

SUMMARY

Parenteral cyanocobalamin (vitamin B₁₂) and vitamin K are frequently indicated in hospitalized patients. Parenteral ascorbic acid (vitamin C), pyridoxine (vitamin B₆), thiamine (vitamin B₁), folic acid and ergocalciferol (vitamin D₂) are infrequently indicated as single entity drugs. Vitamins A and E and niacin, pantothenic acid, and riboflavin (vitamin B₂) are seldom, if ever, indicated for parenteral administration alone.

Parenteral vitamin B complex with ascorbic acid (Berocca-C 500, Solu-B with Ascorbic Acid, Vi-Cert C 500) is indicated in patients who are unable to ingest a normal diet or who have had severe trauma, major surgery, or severe illness. The Product M.V.I. is infrequently indicated since deficiencies of the oil-soluble vitamins A, D and E seldom occur. The products Solu-B-Forte and Solu-B are not essential preparations.

REFERENCES

1. Dalderap, C. B. M.: Vitamins, Chapter 37, in *Side Effects of Drugs*, Volume 7, edited by L. Meyler and A. Herxheimer, Excerpta Medica, 1972.
2. *Report of Food and Nutrition Board*, National Academy of Sciences—National Research Council, 7th Revised Edition, 1968.

Special Article

Rheumatic Fever IV: Treatment of Streptococcal Pharyngitis and Acute Rheumatic Fever

Except in the case of scarlet fever, no completely satisfactory clinical criteria are available for distinguishing patients with streptococcal respiratory infections from those with respiratory illnesses due to other agents. Many instances of pharyngitis and tonsillitis — with or without exudate — are non-bacterial in etiology; some have been linked with a new group of adenoviruses. These non-streptococcal infections do not lead to rheumatic fever and patients with such infections are not benefited by antibiotic therapy.

Because the diagnosis of streptococcal infection of the upper respiratory tract on clinical grounds is necessarily presumptive, a culture of the throat provides valuable laboratory confirmation or rejection of the clinical impression. Throat cultures from the patients with acute streptococcal infections are positive for beta hemolytic streptococci in over 95% of cases.

Many techniques have been employed for the isolation of streptococci and a pamphlet describing one such method is available from the Heart Association.*

To be reliable, the culture must be executed properly — i.e., the tongue depressed, a cotton or dacron tipped applicator under good direct visualization, vigorously swabbed over both tonsillar areas and the posterior pharynx with care not to touch the tongue or cheeks.

Treatment should be started as soon as possible and one is justified in starting treatment on the basis of clinical grounds alone. To be effective in preventing rheumatic fever, treatment must be given within 10 days following the streptococcal infection.

Once the decision to treat the pharyngitis is made, treatment should be sufficient to eradicate the streptococci from the throat. Penicillin is the drug of choice and continued treatment for a period of *ten days* is necessary to prevent rheumatic fever. Despite prolonged treatment, streptococci may not be eradicated especially if oral penicillin is used; follow-up cultures are advised.

Penicillin may be given by either intramuscular or oral route. The method of choice is intramuscular benzathine penicillin G 600,000 to 900,000 units in children, 900,000 to 1,200,000 units in adults. If oral penicillin is used, the recommended treatment schedule is 200,000 to 250,000 units four times daily for a full ten days.

It must be emphasized that the treatment is to be continued for *ten days* even though the temperature returns to normal and the patient is asymptomatic.

In patients who are sensitive to penicillin, erythromycin is the second choice drug. Lincomycin is similarly effective. Both drugs must be continued for ten days.

Tetracycline should *not* be used because of the large number of strains of streptococci resistant to this drug.

Sulfonamide drugs, which are effective in prophylaxis, will *not* eradicate an established streptococcal infection and should not be used for treatment.

Antibiotic troches and lozenges are also inadequate.

Approximately 25% of household contacts will contract streptococcal infections. Therefore, when a well documented streptococcal infection is found, contacts should be examined, throat cultures and treatment provided where indicated.

W. M. Blackwell, M.D.
W. P. C. Clason, M.D.
B. S. Ferguson, M.D.
J. T. Y. Gillies, M.D.
H. L. Harper, M.D.
C. H. Lightbody, M.D.
E. C. Matthews, M.D.

C. H. Okey
D. M. Robertson, M.D.
C. Salisbury
P. Sanfacon, M.D.
T. Townsend, M.D.
G. I. Wilson, M.D.
J. R. Wise, M.D., *Chairman*
Rheumatic Fever Committee

*"A Method for Culturing Beta Hemolytic Streptococci from the Throat," American Heart Association pamphlet EM-164.

Honorary Pin Recipients Receive Awards at 1974 Annual Session of the M.M.A.

Presentation of the Association's Honorary Pins was made by Paul A. Fichtner, M.D., President of the M.M.A., at the Annual Banquet, Monday evening, June 17 at 7:00 P.M.

FIFTY-YEAR PINS

Fifty-Year Lapel Pins were presented to the following members who were graduated from Medical School in 1924:

Androscoggin County

MERRILL S. F. GREENE, M.D. — Dr. Greene, born in Athens, Maine, was graduated from Somerset Academy and Colby College, and received his medical degree from Harvard Medical School in 1924. His hospital appointments and postgraduate courses include the Massachusetts General Hospital, Boston Lying-In Hospital, Herman Kiefer Hospital and Harper Hospital in Detroit, Children's Hospital of Michigan, University Hospital of Michigan and Bridgeport General Hospital in Connecticut. He located in Lewiston in 1927 where he now resides.

LINWOOD A. SWEATT, M.D. — A native of Rangeley, Maine, Dr. Sweatt attended the University of Valparaiso in Indiana and Bowdoin College, and received his medical degree from the University of Vermont College of Medicine in 1924. Following his internship at the Central Maine General Hospital in Lewiston, he practiced in New Gloucester from 1925 to 1932, and then took postgraduate courses at the University of Pennsylvania, Rotunda Hospital in Dublin, Ireland, Queen Charlotte Hospital in London, England and the University of Vienna. During World War I and II, he served in the military and was appointed Surgeon to the Reserves of the Public Health Service in 1943. In 1935, Dr. Sweatt located in Auburn where he is affiliated with St. Mary's General Hospital and the Central Maine General Hospital.

Cumberland County

JOHN M. BISCHOFFBERGER, M.D. — Born in Freedom, Pennsylvania, Dr. Bischoffberger was graduated from the University of Michigan and Mt. Union College, and received his medical degree from Hahnemann Medical College in Philadelphia in 1924. He interned at the Genesee Memorial Hos-

pital in Rochester, New York. Dr. Bischoffberger's hospital appointments include the Maine Medical Center, Mercy Hospital, Northern Cumberland Memorial Hospital and the Maine Eye and Ear Infirmary. On February 12, 1926, he started his practice in Naples where he is still located.

Kennebec County

ARTHUR H. MCQUILLAN, M.D. — Dr. McQuillan, a native of Skowhegan, Maine, was graduated from Skowhegan High School and Bowdoin College, and received his medical degree from Harvard Medical School in 1924. He was Assistant House Surgeon at the Albany Hospital in New York and the New York Lying-In Hospital in New York City. Dr. McQuillan started his practice in Waterville in 1927 and recently located in Oakland.

FRANCIS H. SLEEPER, M.D. — Dr. Sleeper, Superintendent of the Augusta State Hospital from 1946 to 1963, attended Bowdoin College, Bowdoin Medical School and Harvard Medical School, and received his medical degree from Boston University School of Medicine in 1924. He interned and served a residency at the Massachusetts Memorial Hospital and took a postgraduate course at the Metropolitan State Hospital in Waltham, Massachusetts. Dr. Sleeper served as Senior Physician, Assistant Superintendent and Resident Director at the Worcester State Hospital from 1926 to 1938 and as Director of Hospital Inspection and Assistant Commissioner of the Massachusetts Department of Mental Health from 1938 to 1946. Retiring from active practice in 1963, Dr. Sleeper resides in Augusta. He is a native of Houlton.

Lincoln-Sagadahoc County

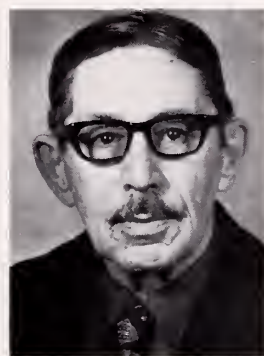
JOHN M. BACHULUS, M.D. — Born in New Britain, Connecticut, Dr. Bachulus attended Middlebury College, Bowdoin College and Bowdoin Medical School, and received his medical degree from the University of Vermont College of Medicine in 1924. Dr. Bachulus interned at the U.S. Naval Hospital in Chelsea, Massachusetts. Serving in the U.S. Navy from 1924 to 1955, he retired as a Captain. His hospital appointments include the U.S. Naval Hospital in Chelsea and the U.S. Naval Base Hospital in Oran, Algeria. He took postgraduate courses at the U.S. Naval Medical School in Washington, D.C. and the U.S. Naval School of Aviation Medicine. In 1955, Dr. Bachulus came to Maine. He is now retired and resides in Brunswick.



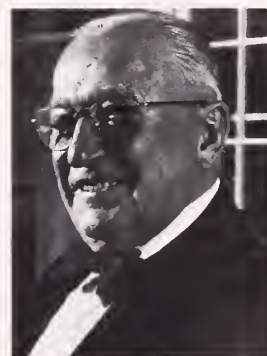
Dr. Sweatt



Dr. Bischoffberger



Dr. Sleeper



Dr. Bachulus



Dr. Boone



Dr. Saunders

Somerset County

MAURICE S. PHILBRICK, M.D. — Dr. Philbrick, born in Skowhegan, Maine, attended Bowdoin College and Bowdoin Medical School, and received his medical degree from Harvard Medical School in 1924. He took a postgraduate course at Worcester City Hospital. Dr. Philbrick practiced in Leominster and Medford, Massachusetts and located in Skowhegan in 1939. He is now retired and resides in Fort Lauderdale, Florida.

FIFTY-FIVE-YEAR PINS

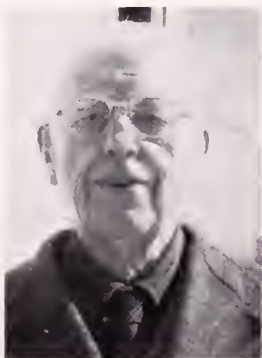
Fifty-Five-Year Pins were presented to the following members who received Fifty-Year Pins in 1969:

Aroostook County

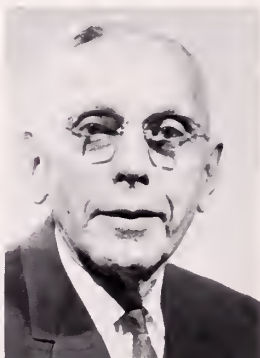
STORER W. BOONE, M.D. — Dr. Boone, a native of Presque Isle, Maine, has practiced in that city since 1921. He was graduated from McGill University Faculty of Medicine in 1919 and interned at the Montreal General Hospital. He took postgraduate courses at Poly Clinic, New York City and the New York Postgraduate Hospital. He is on the staff of the Arthur R. Gould Memorial Hospital.

Knox County

SALLIE H. SAUNDERS, M.D. — A native of Cambridge, Massachusetts, Dr. Saunders, who graduated from Tufts University School of Medicine in 1919, retired to Camden, Maine in 1960. Dr. Saunders practiced in Hopedale, Massachusetts from 1918 to 1921, in Boston from 1921 to 1935, and in the Massachusetts Department of Public Health, Division of Maternal and Child Health, from 1936 to 1960. She served as Director of this Division from 1954 to 1960.



Dr. Nickerson



Dr. Williams



Dr. Fogg



Dr. Bundy

Piscataquis County

NORMAN H. NICKERSON, M.D. — Dr. Nickerson was President of the Maine Medical Association in 1953-54, prior to which he had served as Councilor for the Sixth District from 1940-1943 and from 1949-1952. He was graduated from Bowdoin Medical School in 1919 and interned at the Eastern Maine General Hospital in Bangor with postgraduate courses at Harvard Medical School and Tufts University School of Medicine. Dr. Nickerson served during World War II from 1942 to 1946 and was discharged as a Lieutenant Colonel. He started his practice in Greenville where he has been active on the staff of The Charles A. Dean Hospital since 1920. He is a native of Calais, Maine.

SIXTY-YEAR PINS

Sixty-Year Pins were presented to the following members who received Fifty-Year Pins in 1964:

Androscoggin County

JAMES A. WILLIAMS, M.D. — A native of Topsham, Maine, Dr. Williams was graduated from Bowdoin College and Farmington Normal School, and received his medical degree from Bowdoin Medical School in 1914. He interned at the St. Mary's General Hospital in Lewiston. Dr. Williams practiced in Jonesport from 1917 to 1924, and then moved to Mechanic Falls where he is still located.

Cumberland County

C. EUGENE FOGG, M.D. — Born in Portland, Maine, Dr. Fogg was graduated from Portland High School and the Massachusetts Institute of Technology, received his medical degree from Bowdoin Medical School in 1914, and interned at the Maine General Hospital in Portland. Dr. Fogg served in the military from 1917 to 1947, retiring with an honorary rank of Brigadier General from the Medical Corps, Maine National Guard in 1947. He was Senior Medical Officer, U.S. Naval Station, Hingham, Massachusetts in 1917; Surgeon, U.S.S. Sierra in 1918; Assistant Surgeon, U.S. Naval Hospital, Portsmouth, New Hampshire in 1919; Brigade Surgeon, First Naval District, 1920-1928; Battalion Surgeon, 240th Coast Artillery, Maine National Guard, 1930-1932; Regimental Surgeon, 240th Coast Artillery, Maine National Guard, 1932-1942; and Professor of Military Medicine, Army Training Schools, University of Vermont College of Medicine, 1942-1945. Dr. Fogg located in Peaks Island following his retirement.

Piscataquis County

HARVEY C. BUNDY, M.D. — A native of Hyde Park, Vermont, Dr. Bundy was graduated from the University of Vermont College of Medicine in 1914. He practiced in Brownville

Junction from 1914 to 1915, Lake View from 1915 to 1918, Mars Hill from 1921 to 1927, and in Milo from 1927 until his retirement in 1955. He served as Chief Surgeon for the Bangor and Aroostook Railroad for many years, as Chief Surgeon for the Milo Community Hospital from 1928 to 1955, and was Chairman of the Board of Trustees from 1960 to 1969.

SIXTY-FIVE-YEAR PIN

A Sixty-Five-Year Pin was presented to the following member who received his Fifty-Year Pin in 1959:

York County

WILLARD H. BUNKER, M.D. — Dr. Bunker, who was graduated from Bowdoin Medical School in 1909, was President of the Maine Medical Association in 1938-1939, and prior to that had served as Councilor for the Fifth District. Dr. Bunker served his internship at the Maine General Hospital in Portland. A native of Manset, Maine, he practiced in Calais from

1909 to 1949 and then moved to York Harbor where he is still in active practice. He served as County Medical Examiner for Washington County, and is a member of the Surgical Staff of the York Hospital and the Portsmouth Hospital.



Dr. Bunker

DOCTORS SAVE LIVES BY TELEPHONE — *Continued from Page 155*

difficulty keeping pace with the best and most advanced medical care possible." However, Dr. Belows emphasizes that the program is not a substitute for the consultant who personally reviews the patient's hospital chart, elicits a medical history, and examines the patient. Rather, it is intended to overcome barriers of distance and allow doctors to consult readily with experts on medical problems that may be unusual and baffling. Frequently the caller has need of information that may not yet have been published; MediPhone can provide physicians with the latest treatments available long before they appear in printed form.

MediPhone is available only to physicians. The charge for a MediPhone consultation is \$15, from which the consultant receives a fee for his services. The charge for the consultation can be included in

the patient's bill and may be covered by his health insurance carrier. MediPhone ultimately should help reduce the rising cost of medical care. Doctors who use MediPhone can provide better care for their patients, and better care is usually cost-saving in the long run.

MediPhone, the first and only nationwide physicians' telephone consultation service in operation, recently received a regional development grant from the prestigious Robert Wood Johnson Foundation. This grant will help pay for the administration of MediPhone and make its services better known to physicians. Current plans are to mail individual membership cards to physicians. It is hoped that wider use of MediPhone's resources will enable physicians to administer better health care to the public.

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They Merit Your Support



Service Benefits Folder Distributed

A service benefits folder has been printed and will be distributed to Maine Blue Cross and Blue Shield Participating Physicians and Hospitals for dissemination to subscribers soon. The Service Benefits Plan is special and is part of every Blue Shield contract. Participating Physicians have agreed to accept the Blue Shield allowance as payment in full for services rendered to those subscribers whose incomes fall within certain ranges. It is extremely beneficial to those Maine Blue Cross and Blue Shield subscribers with moderate incomes.

The allowance that Blue Shield pays to the physician for his services is the same regardless of the subscriber's income. Customarily, if the doctor's bill is more than the Blue Shield allowance, the difference is passed on to the patient. However, under the Service Benefits Plan, the participating physician agrees to restrict his charges to the levels of Blue Shield allowances, so that the subscriber who qualifies will have no additional doctors' bills for covered services.

In order to qualify for Service Benefits, a subscriber must fit into a specified annual income classification. At the time medical care is received, total family income from all sources including rents, dividends, salaries, wages, etc. for the previous twelve months, must not exceed the level specified in the contract.

Our Service Benefits Plan is a major example of our continuing effort to assure that quality healthcare comes within the reach of all.

A subscriber is eligible for service benefits if:

he is enrolled as a single subscriber under...	and	his income during the last 12 months did not exceed...
Blue Shield A		\$2,500
Blue Shield C		\$4,000
Blue Shield D		\$5,000
OR		
he is enrolled as a two person or family subscriber under...	and	his total family income for the last 12 months did not exceed...
Blue Shield A		\$4,000
Blue Shield C		\$6,000
Blue Shield D		\$7,500

Exclusions

Eligibility for Service Benefits is determined at the time a claim is filed. A member may be excluded from Service Benefits, if...

- The procedure is not listed in the Blue Shield fee schedule.
- At any time of arranging for the services of a physician, he fails to notify his physician of his income classification and service benefits membership.
- He receives from another source additional benefits to which he is legally entitled for the same or similar services.
- At the time when the physician's services were rendered, he occupied a private room, when a semi-private room was available, and the physician did not feel that private accommodations were necessary.
- At the time when the physician's services were rendered, he employed a private nurse when, in the opinion of the attending physicians, such private nursing was not necessary.
- He receives intensive medical care.
- He is one of two or more persons eligible for enrollment under a two-person or family contract and his combined annual income is more than the two-person or family service benefit income as shown in his contract.

If you would like a supply of service benefits folders for your waiting room, contact your Professional Relations Representative.

News, Notes and Announcements

CPHA presents A PAS and MAP Regional Workshop

Albany, New York — 18 July 1974

Are you ready for PSROs?

Can you do Medical Audit Studies?

The Program: PSRO and the Hospital's Quality Control; How to Do Medical Audit Studies; Display of Practice Demonstration; PSRO Legislation and Utilization Review; Laboratory Sessions in Applications of Data; CPHA Resources to Help Hospitals and PSROs.

Academic Credit: Fully approved by AMA Council on Continuing Medical Education. Attendance applies toward AMA Physician's Recognition Award (*Category 1*). Approved by AOA for continuing medical education credit.

Acceptable for elective hours from the American Academy of Family Physicians, American College of General Practitioners in Osteopathic Medicine and Surgery (Class 2), and College of Family Physicians of Canada.

The Faculty: CPHA's professional staff and guest tutors from PAS hospitals.

Time and Location: 9:00 a.m.-4:00 p.m.; Registration-8:30 a.m.; Thursday, 18 July 1974, Albany Hyatt House, 1375 Washington Avenue, Albany, New York 12205, (518) 459-3100.

Registration Fee (per person): PAS Hospital, \$50.00; Non-PAS Hospital or Organization, \$65.00. Fee includes all study materials and luncheon.

MEDEX-NEW ENGLAND

MEDEX-NEW ENGLAND at Dartmouth Medical School is now accepting inquiries from General Practitioners, Internists and Pediatricians interested in becoming perceptrors for the Physician's Assistant class January 1, 1975 to December 31, 1975.

Contact: B. Strauss, M.D., Director, MEDEX-NEW ENGLAND, P.O. Box 146, Hanover, New Hampshire 03755, Deadline: September 1, 1974.

Postgraduate Courses Available at Univ. of California, Berkeley

The Maternal and Child Health Program of the University of California School of Public Health at Berkeley announces postgraduate courses of instruction for pediatricians, obstetricians, and other physicians interested in receiving training in the field of Maternal and Child Health. These programs all lead to the degree of Master of Public Health. Tax-exempt Fellowships are available, consisting of support for the trainee and his dependents, tuition and fees.

Program areas at the present time include nine-month programs in Maternal and Child Health, Day Care and the Preschool Child, Health of School-Age Children and Youth, and Maternal Health and Family Planning. Twenty-one month programs in Care of Handicapped Children, Comprehensive Health Care and Perinatology are also available.

Applications are now being accepted for the group entering September, 1975. For information, write to Helen M. Wallace, M.D., School of Public Health, University of California, Berkeley, California 94720.

Summer Programs at Colby College, 1974

*The medical programs have a little star at the left.

June 15-August 23

*29th Annual Lancaster Course in Ophthalmology
July 23-26

*4th Annual Seminar in Surgical Techniques

July 27-28

4th Annual Show, Water-Oak Gem and Mineral Society

July 28-31

*5th Annual Seminar in Neurosurgical Techniques

For further information write to:

R. H. KANY

Director of Summer and Special Programs

Colby College

Waterville, Maine 04901

Pulmonary Disease

August 25-29, 1974. First Annual Seminar, Topics in Pulmonary Disease. National faculty including Barry Fanburg, M.D., Thomas Petty, M.D., Gareth M. Green, M.D., and more. Twenty-one hours of Category I credit available. Colby College/Thayer Hospital, Waterville, Maine.

Inquiries to R. H. Kany, Director, Special Programs, Colby College, Waterville, Maine 04901.

Maine Institute of Continuing Medical Education

Depression, Suicide-Death and Dying Seminar

A three-day seminar on "Depression, Suicide-Death and Dying" is planned for August 25 to 28 at St. Paul's Center in Augusta, Maine (restricted to 125 participants). The seminar is open to physicians, nurses, clergy, social workers, graduate students, etc.

Dr. Frank Ayd, Jr. from Baltimore and Dr. Elizabeth Kubler Ross from Chicago, both with abundant experience, will present comprehensive information including approaches to management in 16 hours of lecture, conference, and discussion.

Dr. Frank Ayd will discuss "Recognition and Management of Depression," "Suicide — A Preventable Disaster," and "Who Shall Live?" Dr. Elizabeth Kubler Ross will cover "What the Dying Have to Teach," "Stages in the Process of Death and Dying," "Management of the Dying," including newer Hospital Developments for specific patient care and home care approaches.

The cost for this seminar will be \$100.00. Cost of housing and meals is separate. Scholarship and grant aid is available through letter of application.

A limited number of accommodations are available for spouse and children. The seminar will be held early mornings, late afternoons, and evenings to allow participants to enjoy summer relaxation time in Maine.

Registration:

MICME: Seminar on Depression, Suicide-Death and Dying
August 25-28, 1974, St. Paul's Retreat Center,
Augusta, Maine 04330

Name:

Address:

City, State: Zip:

Total Fee:

\$165. Seminar — Meals and Housing at Center

\$130. Seminar — Meals Only with Housing off Center

\$ 75. Spouse and Children over 10, \$50. for children under 10

Make check to:

Seminar "Depression, Suicide-Death and Dying"

MICME — Augusta General Hospital

Augusta, Maine 04330

Accreditation applied for from AAGP and AMA

Letters to the Editor

To the Editor:

Fortunately we have now been allowed by the F.D.A. to use the new antibiotic Trimethoprim-sulfamethoxazole* for treatment of urinary tract infections. Those who have read the background material on this new agent, listened to sales representatives, or read medical advertisements must be well aware of the unique nature of this agent. Recently at one large institution in this State this drug, which initially was put on the formulary, then was withdrawn (not without objection) because it was a "combination" drug. There was no apparent concern about the fact that such drugs as Empirin® Compound, Percodan®, Lomotil®, and many others, all of which are "combination" drugs, are well entrenched formulary agents. We agree that in many instances combination drugs, particularly anti-hypertensives, are not particularly desirable. In this case, someone with even basic knowledge should realize the rather unique nature of this drug and discard the arbitrary label of "combination."

That this agent is highly desirable and long awaited is documented in an editorial in *The Journal of the American Medical Association* March 25, 1974. In this editorial, Dr. Vaisrub, an astute clinician and scientist, heralds the appearance of this antibiotic. He states, "unlike most antimicrobial agents TMP-SMZ was not discovered serendipitously or through an empirical route, wherein practice precedes theory and understanding follows observation and experience. It was the end result of a logically planned and artfully designed strategy." He goes on to say that "although we live in a world of instant communication, TMP-SMZ, which has been used extensively overseas for more than five years, was only recently recognized in the United States. The mills of recognition may grind small but they grind exceedingly slow."

*This agent manufactured under the names Septra, Burroughs-Wellcome; Bactrim, Roche.

In addition to this, there are vast stores of clinical information which attest to the usefulness of this agent. To arbitrarily stifle the use of this drug in hospitals on the basis of its "combination" nature reflects a certain amount of unawareness in modern pharmacology. To withhold this drug is an almost unbelievable act. It is an insult to the clinician and, perhaps most importantly, it denies the patient the right to the best of medical care which is available.

Although this is a relatively small issue, it hopefully does not reflect a general trend in which arbitrary, uninformed action and bureaucracy are beginning to dominate hospital practice. We fervently hope that this event is not a telltale for the future which would result in control of patient care by a few.

WILLIAM H. AUSTIN, M.D.
125 Chadwick St.
Portland, Maine 04102

To the Editor:

Again, this year I am compiling case reports of allergic reactions to biting insects, i.e., mosquitoes, fleas, gnats, kissing bugs, bedbugs, chiggers, black flies, horseflies, sandflies, deerflies, etc. I am also interested in reactions to the Imported and Southern Fire Ants.

I would like physicians to supply me with case reports of those patients who have had reactions to such insects. Include in your reports, the type of reaction and complications, if any, the age, sex, and race of the patient, the site of the bite(s), the season of the year, the immediate symptoms, the skin test results, desensitization results, if any, and any associated other allergies. Send this information to the following address:

CLAUDE A. FRAZIER, M.D.
4-C Doctors' Park
Asheville, N.C. 28801

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The Journal of the Maine Medical Association

Volume Sixty-five

Brunswick, Maine, August 1974

Number 8

Senior Medical Consultants

The right men in the right places at the right time

ALFRED HURWITZ, M.D., F.A.C.S.*

In a recent issue of the *New York State Journal of Medicine*, the following statements were made. "One of the sad, senseless errors of the modern era in this country particularly, is the compulsory retirement of capable teachers on the arbitrary basis of age, and age alone. Chronology replaces the values of maturity, judgment and experience. We have become unmindful of the zestful unique ability of stimulating teachers to meet a specific need. This is sheer waste. The need is there and this static negative policy yields no benefit to anybody. Many teachers prefer to teach and to make their teaching creative."

The first program to be launched in this country was initiated by Dr. Joseph Moldaver, Clinical Professor of Neurology at the Columbia University College of Physicians and Surgeons. In July 1970, the Bureau of Health Manpower of the National Institutes of Health agreed to fund this program. With the completion of the first year of the study, N.I.H. funded the second phase of the project in which the services of the physician teachers were offered to participating hospitals with a token \$100 honorarium for each clinical instruction session. At the present time, there are more than 70 New York consultants who are invited to teach at more than 30 hospitals. The responses from the hospitals have been enthusiastic endorsements of the program. Many consultants are invited to participate on a regular basis. Recently, the staff of SMC of New York have been asked to participate as instructors of a comprehensive ambulatory care program in an attempt to improve the performance of the outpatient department so that unnecessary hospitalizations with its burgeoning costs could be avoided. In

one instance, a physician teacher has organized the only comprehensive arthritic clinic in a three county area in upstate New York. In September 1972, the contract with the National Institutes of Health terminated and the SMC of New York was incorporated as a nonprofit organization to obtain tax exempt funds from private sources. All donations are used to provide for clinical sessions at the participating hospitals and for administrative expenses. Similar programs are now under way in California, Arizona and Florida. On September 20, 1973, Senior Medical Consultants received one of the Gerard B. Lambert Awards. From a total of 1,718 medical care program ideas that were submitted throughout the country, ten were selected for "innovative ideas that improve patient care and/or reduce costs."

The SMC program for Maine has gotten off to a propitious start. At the present time, five consultants have expressed a keen desire to visit hospitals that request their services and to see in consultation those patients with complicated problems at the request of the local physicians. The consultant will also be available for informal teaching rounds, for assisting those people who are responsible for improving the professional standards of the staff and more efficient utilization of their hospital beds. In other words, the consultant's participation will conform to the requests and interests displayed by the staff and will not be a rigid didactic session. It is expected that there will be a wholesome and enthusiastic exchange of ideas during which the consultant will acquire new knowledge in the same manner that he hopes to impart some "pearls" to his colleagues. It should prove to be a mutually rewarding experience.

Maine is fortunate in having available consultants

Continued on Page 176

*Consultant in surgery, Augusta General Hospital, Augusta, Maine 04330.

Cancer of the Thyroid

OAKLEY A. MELENDY, M.D.

The purpose of this paper is to review our experience at the Augusta General Hospital with cancer of the thyroid, and to clarify as much as possible our thinking on the treatment of this disease.

First, it must be understood that cancer of the thyroid is not just one specific type of cancer, but many different types which vary in their lethal potential from the very benign to the most lethal of all cancers. Much has been written about this disease, and the treatment has varied from no surgery at all to the other extreme of total thyroidectomy. The rationale was that the most benign form of this disease, namely papillary cancer, is rarely fatal, and that the most malignant form, undifferentiated carcinoma, is practically always fatal. It has been shown on numerous occasions, however, that papillary cancer has a definite lethal potential,¹ but that if treated correctly, it has an excellent prognosis.

The rationale of the second form of treatment, total thyroidectomy, in nearly all cases rests in the fact that through a rich network of lymphatics, there is extensive intraglandular and pericapsular spread in cancer of the thyroid;⁴ and therefore, it requires a total thyroidectomy to eradicate this disease. Of course, total thyroidectomy, even in the best of hands, carries a twelve to fifteen percent chance of permanent hyperparathyroidism or tetany, and a somewhat lesser chance of recurrent nerve damage.

A course somewhere in between these two extremes of treatment seems to offer the best overall results, and indeed, this is the mode of treatment used in papillary cancer of the thyroid at many of the major medical centers in this country at the present time. This treatment consists of a total lobectomy on the affected side and a partial lobectomy on the opposite side with removal of the isthmus.

There is some disagreement about whether a node dissection should be done and also as to type of node dissection. A study of 182 cases of papillary cancer of the thyroid was made at Memorial Hospital in New York, and a standard radical neck dissection was done with each of these cases. The surgeon in each case was asked to state whether the nodes seen were clinically positive, clinically doubtful, or clinically negative. In 115 cases in which the surgeon stated the nodes were clinically positive or clinically doubtful, 104 cases or 96% had positive nodes on microscopic examination. Of the 67 cases in which the surgeon did not think there were any cervical node metastases, 41 patients or 61% had positive nodes. This would seem to argue strongly for a node dissection in each case. However, George Crile, Jr. in a series of 307 patients with papillary cancer of the

thyroid,¹⁰ all operated on by him, pointed out the following: "There have been no deaths from local recurrence or cervical metastasis of papillary cancer, and prophylactic node dissection was not done unless cervical nodes were grossly involved at the time of operation. Tumor reappeared in only 4% of these patients, and in each case it was easily controlled by a small secondary operation." He also points out that the standard radical neck dissection is not the proper operation when there are definite positive nodes in a papillary cancer of the thyroid. Rather, a node dissection is needed, which also includes the Delphian nodes in the midline above the isthmus, the paratracheal nodes, the nodes in the tracheo-esophageal groove, and those in the thymus and anterior mediastinum.

Cline and Shingleton at Duke University also subscribe to this procedure of a modified node dissection of the neck only when clinically involved nodes are present in papillary cancer of the thyroid,⁸ as does Oliver Beahrs of the Mayo Clinic,¹¹ R.A. Mustard of Toronto,⁷ and surgeons at many other centers.

CLASSIFICATION AND TREATMENT OF THE DIFFERENT FORMS OF THYROID CANCER

I. *Papillary Cancer of the Thyroid.* This is the most common of the thyroid cancers, making up 50% to 70% of the cases in the most reported series. Happily, it is also the most benign group, and its overall cure rate, if properly treated, is 90%.

In this group are included all the cancers which have papillary components, whether the lesion is purely papillary, mainly papillary with some follicular components, or mainly follicular with only a few papillary features. This group has a uniform biologic behavior, and therefore, is lumped together and classified as papillary cancer. It does not include, however, any cancer which has anaplastic or undifferentiated cancer mixed in with the papillary because here the behavior of the tumor is governed by the undifferentiated cancer, and the prognosis is extremely poor.

There has been a change in the malignancy of this papillary group, as pointed out by Dr. George Crile, Jr.¹⁰ Prior to 1937 the mortality was around 38%. Since then, the mortality has dropped to less than 10%. One reason for this has been the postoperative use of thyroid suppression by means of dissipated thyroid or one of its equivalents. It should be mentioned that this is very successful in the younger age group, 6 to 40 years, but not so successful in the older age group. Secondly, for unknown reasons,

these tumors have seemed less malignant during the last 35 years, and this was noted prior to the use of thyroid suppression, which was started in 1954.

Papillary cancers of the thyroid are for the most part nonencapsulated, invasive, and metastasize early, chiefly to the regional nodes. They are multicentric in about 15% to 20% of cases. They tend to remain in the neck for long periods of time, and for the most part will not take up radioactive iodine.

In young people (16 years or less) almost all of the thyroid cancers are of the papillary type. Oliver Beahrs of the Mayo Clinic points out that 50% of the nodular goiters seen in children turn out to be cancer; hence, he advises that all nodular goiters in children be treated surgically.

The most important change in thinking regarding the treatment of papillary cancer of the thyroid that has come about in recent years is the interest now given to regional node metastases. They are no longer regarded as the main prognosticators of cure. The two most important considerations in this regard are (1) the age of the patient, and (2) the size of the lesion. Sex also plays some part in the disease, since it is more aggressive in males.

In patients with papillary cancer of 1½ cm. size or less, there have been no deaths in a 40-year followup despite the fact that 39% of these patients had proven node metastases. Also, in a series at the Mayo Clinic, if the papillary cancers were greater than 1½ cm. in size, but still remained within the thyroid capsule, only 3% died from thyroid cancer. Dr. George Crile, Jr., in a series of patients at the Cleveland Clinic, states "that in a patient between puberty and 45 years of age, papillary cancer of the thyroid, if treated properly and not cut into, implanted in the wound and thus disseminated, is associated with almost as good a life expectancy (10 to 15 years) as the patient would have had without cancer."

II. Follicular Cancer of the Thyroid.

A. *Encapsulated Angio-invasive Cancer.* These are encapsulated tumors, rarely multicentric and seldom metastasize to the regional nodes, but spread through the hematogenous route.

"What is needed at operation in these cases is to remove the lobe completely with the capsule intact, and if the opposite lobe is clinically all right, then leave it alone," says Dr. Crile. There is some disagreement over this statement with Dr. Rose at the M.D. Anderson Hospital in Houston, who advises extirpation of the remaining lobe. It would seem better judgment to remove this remaining lobe since thyroid suppression is not usually effective in this particular tumor, and some are multicentric. Radioactive iodine is effective in a fair number of these tumors.

The outlook on this type of tumor depends on the degree of blood vessel invasion. When there is none or slight blood vessel invasion, 3% died of cancer in

a 40-year followup at the Mayo Clinic. When there is moderate or severe blood vessel invasion, one-half of these patients died of cancer.

B. *Invasive Follicular Cancer.* There is some disagreement as to whether this is just an advanced form of encapsulated follicular cancer or a separate entity. At any rate, it is almost uniformly fatal, and invades blood vessels and surrounding tissues. It grows so slowly, however, that one-half of the patients survive more than five years.

Operations for this tumor are mainly palliative, and no extreme radical surgery is called for.

III. *Undifferentiated Cancer of the Thyroid.* One tumor has to be separated from the rest in this field, since it is not only a very interesting tumor, but it also has a better prognosis than the remaining undifferentiated cancers, of the thyroid. This is medullary cancer of the thyroid.

The name is a misnomer since it is not a soft tumor, but stony hard. It is usually gray-white or pale tan in color, usually within the thyroid capsule, and it spreads extensively to nodes and through the bloodstream. The tumor is undifferentiated in structure, but its cells are regular and not anaplastic. It should be treated by radical removal of the affected part of the thyroid and a radical neck dissection. Its prognosis seems to be related to spread to lymph nodes. When the regional nodes were not involved, only 6% died in a 20-year followup. In the same 20-year followup, when the nodes were involved, 50% of the patients died.

The remainder of the anaplastic carcinomas, namely, giant cell, spindle cell, sarcoma, lymphoma, squamous cell, etc., form a group of the most malignant tumors of the body. Their course from onset to death is usually less than a year, and often is as short as four months. They invade locally and spread to regional nodes and to the lungs. Most are inoperable when first seen. Biopsy and radiation offer the best treatment for them. However, if the tumor can be removed safely surgically, it should be done, because every once in a while a patient with one of these cancers survives many years, and there is no feature to tell you which one this may be.

AUGUSTA GENERAL HOSPITAL CASES

No claim is made for a large series in our institution, nor any significant results since our followup time is too short. The number of patients seen and treated at this institution was 27, and this spanned the years 1956 through 1973. The majority of them were seen in the years 1965-1973. There is 100% followup in all cases.

Of these 27 cases, 22 were treated for cure and 5 were treated elsewhere originally and then ended up at our institution, either for x-ray treatment, palliation, or terminal care. Of the 22 cases treated for cure, 17 were papillary cancer, 4 were follicular, and 1 was a medullary cancer. There was 1 postopera-

tive death in this series, and this was caused by a respiratory condition only a few hours after completion of the operation.

A second patient died some seven years postoperatively from widespread carcinoma of the large bowel, but with no sign of any residual thyroid cancer at the time of autopsy.

A third patient died four years postoperatively. This was a middle-aged woman, who, at her initial surgery, had definite papillary cancer left behind in her anterior mediastinum and encircling some of her great vessels. She was given very high doses of radiation and then thyroid suppression, but she succumbed to a rupture of the carotid artery from residual thyroid cancer four years later.

Thus, we are left with 19 cases, all living and well and apparently free from cancer.

Of the five that came to the Augusta General Hospital for terminal care, one case is striking for its unusual aspect. This was a 72-year-old female who came to us with a chief complaint of hemoptysis and a stony hard, fixed mass in the right supraclavicular area, and a small nodule in the right thyroid. She was given x-ray treatment without relief after a biopsy of the mass was diagnosed as papillary cancer of the thyroid. Her course was downhill until she was given thyroid suppression treatment with three grains of thyroid per day. At her age thyroid suppression is not likely to be of much help, but here it shrank the tumor dramatically and completely reversed her course. She is living and well now, although with residual disease, and this is over a year since the start of her treatment.

The main indication for surgery in the last few years at this institution has been the presence of a solitary nodule on an I-131 scan. There were 715, I-131 photoscans done at the Augusta General Hospital in the years 1966 through 1973. Of these, 115 had a "cold" area or area of nonfunction within the thyroid. Of these cases, 59 had surgery and 9 were found to be malignant. Thus, 15.2% of patients who had a "cold" area on scan were found to have a thyroid cancer.

What then, in brief, is the way we should approach a patient who comes to our office with a lump or lumps in the thyroid?

First, after obtaining a history and a physical examination, the basic thyroid studies should be obtained, namely, T₃, T₄, RAI uptake, and scan. Then, if the patient is a child of 15 years or less, he should have surgery, since 50% of nodular goiters in children will be cancer.

If it is a solitary nodule and the remainder of the gland feels perfectly normal, then surgery should be advised, at once if a male. But if the patient is a female, especially if between 15 and 40 years of age, a trial of three or four months of thyroid (2 grains per day) should be given, and a few of the nodules will disappear.

If a cold nodule shows up on scan, the surgery is advisable. But again, if the patient is a female between 15 and 40 years of age, a few months of thyroid treatment is indicated.

If it is a multinodular goiter with no cold areas on scan and it has been there for years, it can probably be safely observed. If the multinodularity is of recent origin, however, or if the patient is male, then it should be watched very carefully, and if anything, err on the conservative side, which in this case is surgery.

If a sudden and painful nodule has appeared in the neck, then this almost always represents hemorrhage into a cyst which can be treated by aspiration.

Just a few reminders — If you have a "hot" nodule on scan, don't relax completely and shut off your thinking about thyroid cancer, because it definitely, if very infrequently, does occur in "hot" nodules. Similarly, don't relax completely in Hashimoto's Disease, since Oliver Beahrs' series of 405 cases of Hashimoto's Disease at the Mayo Clinic, 18 patients or 3% developed thyroid cancer.¹¹

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Surgery of the Liver in Community Hospitals

PADIATH A. ASLAM, M.D.

Resection of the liver is occasionally necessary for removal of traumatized tissue or primary or metastatic tumor. Such opportunities arise relatively infrequently in any community hospital; however, any surgeon treating trauma or cancer patients might come across a situation where liver resection might be the best course to pursue. Hence, our own experience in a period of three years will be reviewed to emphasize significant factors which led to the survival of patients.

MATERIAL

From 1971-1974, four patients had resection of one of the major lobes of the liver. One patient had resection of one segment of the liver. Six were operated on at the Augusta General Hospital and one at the Gardiner General Hospital. Five patients were operated on for trauma, and two were done for tumor. During the same three-year period, one patient with a bullet to the liver was treated by drainage, and another trauma to liver was treated by suture of laceration at Augusta General Hospital.

CASE REPORTS

Case #1 — A 50-year-old male was admitted to the Augusta General Hospital after sustaining severe blunt injury.¹ The patient was promptly operated on because of clinical signs of intraperitoneal hemorrhage. At operation, massive bleeding was controlled by clamping off porta hepatis and mattress sutures of liver. Liberal use of metallic clips helped in the hemostasis. The postoperative course was complicated by re-exploration for pancreatic fistula and partial small bowel obstruction. Hyperalimentation over a period of three weeks helped greatly in the recovery of the patient. Three years later the patient is in excellent physical condition.

Comments: Associated pancreatic injury was missed initially. We do not recommend large mattress sutures through the liver if it is possible to control blood loss by other methods.

Case #2 — A 10-year-old boy was shot through the chest in an accident in May of 1971. On admission, hemoperitoneum was evident and abdominal exploration was carried out. Major hepatic and splenic injury necessitated right hepatic lobectomy and splenectomy. Bleeding was initially controlled by packing and then right hepatic artery, portal vein and hepatic veins were ligated through a thoracoabdominal incision. Postoperatively, albumin and hyperalimentation were given. Normal growth and development has continued for the two and one-half year follow up period.

Comment: In this and subsequent cases common duct drainage was not employed. Such drainage increases the chance of postoperative stress ulcerations and may be an unnecessary interference.²

Case #3 — A 23-year-old male was admitted to the Augusta General Hospital after sustaining severe blunt injury to the right side of the abdomen. On exploration, the right leaf of the diaphragm was torn from the costal attachments and the right lobe of liver was severely traumatised and macerated. In addition, small bowel mesentery was torn in several places and large bowel was

contused. A right lobectomy of liver was done to control bleeding and debride devitalized tissue. The technique employed was packing of multiple sites of bleeding while portal vein and hepatic arteries were dissected and ligated. Hepatic veins were controlled at the end of the procedure. The ruptured diaphragm was sutured and splenectomy was also done. Postoperatively, a right pleural effusion was tapped once. Hyperalimentation and albumin facilitated recovery. In the two and one-half years of follow up, he had to have two incisional hernias in the epigastrium repaired. However, he has had a normal life since recovery from the first operation.

Case #4 — A 51-year-old male was explored because of right upper quadrant pain and nonvisualized gallbladder. Preoperative diagnosis was cholelithiasis. On exploration, a carcinoma of the gallbladder with metastatic tumor to the right lobe of the liver was seen. There was no evidence of tumor elsewhere. Hence, a right hepatic lobectomy and cholecystectomy was done. In the six month follow up period, the patient has been plagued with diarrhea and malnutrition. Alkaline phosphatase has remained mildly elevated.

There is clinical suspicion that there is recurrence of tumor.

Comment: Hyperalimentation and albumin initially helped patient to recover. An extended lobectomy would have possibly improved his chances of long term survival.

Case #5 — A 54-year-old female was operated on for chronic cholecystitis. At that time pancreas was noted to be enlarged and firm. Pathological report of gallbladder showed carcinoma. A re-exploration was then carried out with resection of the segment of liver adjacent to gallbladder bed. No evidence of tumor was found in this part of the liver. However, patient rapidly went downhill in one month and died. A mediastinoscopy before patient's death at another hospital revealed undifferentiated carcinoma. No autopsy was obtained.

Comment: Here the adenocarcinoma seen in the electively removed gallbladder was clearly a red herring. It is presumed that the patient had carcinoma of the body of the pancreas.

Case #6 — A 28-year-old female was admitted after being involved in an auto accident. Patient was watched for blunt injury of liver for four days and because of ileus, the abdomen was explored. Multiple lacerations of right lobe of liver were found. Wounds were debrided, sutured and accumulated bile and blood removed. Postoperatively, patient had an uneventful convalescence.

Comment: Most liver injuries do not require resection. Debridement and suture are perfectly adequate mode of therapy. Only when devitalized tissue is left behind without drainage, troublesome problems like liver abscess and secondary hemorrhage arise.

Case #7 — A 16-year-old male was explored for a 22-calibre bullet wound. The bullet passed through the right lobe of liver and lodged in the pericardium. No major damage to the liver was evident except for the bullet track. Right subhepatic space was drained and patient carefully followed by liver scans. Patient was discharged without any complaints in two weeks. A slight elevation of alkaline phosphate and bilirubin has persisted for two years. However, patient has remained asymptomatic.

DISCUSSION

Severe blunt trauma not infrequently involves liver. In most instances debridement and drainage

are all that is required (Cases 6 and 7). Occasionally liver resection is necessary (Cases 1, 2, and 3). Elective resection for carcinoma of gallbladder has given good results in selected cases. In any case, morbidity and mortality need only be minimal even in a community hospital. The technical factors that have helped are wide exposure by a thoracoabdominal incision for right lobectomy and ligation of portal and hepatic blood supply to the area of resection before cutting into the liver. Use of metallic clips³ have helped to make the blood loss minimal, operation field uncluttered, and decrease operating time. Ligation of hepatic veins in the liver substance allows great safety with technical ease. Common duct drainage has not been used for reasons discussed by Lucas and others.²

Postoperatively, infusion of albumin and hyperalimentation have cut down morbidity and have improved patient's nutritional status at the time of discharge. Careful attention to the other co-existing

injuries is essential for optimum result as shown by Cases 1 and 2.

Though operated in community hospitals, there was no operative mortality. The quality of life after operation was excellent in all except one operated on for tumor in whom it was judged fair. In that one, (Case 4), we believe life has been prolonged. The only death was unrelated to operation and was due to unrecognized spread of tumor.

ACKNOWLEDGEMENT

Case 4 was operated at Gardiner General Hospital. Cases 6 and 7 were operated by different physicians.

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SENIOR MEDICAL CONSULTANTS: THE RIGHT MEN IN THE RIGHT PLACES AT THE RIGHT TIME — *Continued from Page 171*

of the caliber of Dr. Wyland Leadbetter, formerly Chief of Urology at the Massachusetts General Hospital, Dr. Barbara Stimson, Emeritus Professor of Orthopedics at Columbia Presbyterian Hospital and a world renowned authority on trauma, Dr. O. Currier McEwen, Emeritus Professor of Medicine at New York University and a prestigious teacher and investigator in the field of arthritis and Dr. James Weyand, an authority on proctological surgery. After 25 years as a Chief of Surgery, I also welcome the opportunity to participate in this program. All of us are now happily settled in Maine and have a deep interest in making contributions to the

betterment of patient care and to the enhancement of the knowledge and interest of physicians especially those who practice in small communities.

The organization is looking for additional qualified physician teachers in *all* specialties to join the program and for institutions that can utilize such talent. Please send your comments or requests for additional information to Alfred Hurwitz, M.D., Liberty, Maine 04949.

ADDENDUM

Since this manuscript was prepared, two more eminent specialists have joined our ranks.

CANCER OF THE THYROID — *Continued from Page 174*

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Problem-Oriented Community Cancer Care*

FRANCIS J. O'CONNOR, M.D., F.A.C.R.**

In the spring of 1968, the Maine Institute of Continuing Medical Education was established at the Augusta General Hospital to provide continuing medical education for all levels including students, technicians, medical students, nurses, and physicians in order to improve the quality of patient care in the community.¹ The Weed Problem-Oriented System² was introduced in the fall of 1968, to provide continuing education and improving patient care. Many physicians learned to prepare structured problem-oriented medical records. The problem-oriented system was applied in the radiotherapy department as a Community Cancer Care Project, and the defined patient population became the patient with a diagnosis of malignant disease. Attempts were made to obtain on all patients: a broad data base, the listing of all problems, a plan for each problem, and follow-up on all problems using structured progress notes.

CANCER CARE TECHNICIANS

To record all necessary information the radiotherapy technicians became physician associates and have emerged as community cancer care technicians or coordinators.³

Radiotherapy technicians have been taught to perform a physical examination, to collect laboratory data, to abstract medical records, to compile a comprehensive flow sheet, and to prepare a problem list of active and inactive or resolved problems.

DATA BASE

Thus, the radiologist interested in cancer care has maximum information on the cancer problem and other problems influencing cancer management. From over 5 years experience with this system, the management of other problems may often be as important as the cancer. Doctors Bauer and Robbins at the Boston City Hospital on a study of 2,734 autopsies on persons with cancer found that almost one-fourth of the patients succumbed to disease unrelated to their malignancy, although 42% of these patients had tumors with regional or remote metastases. . . . "Thus, patients seriously ill with cancer can still die from another unrelated disease."⁴

Our data base is as follows. We have used an automated history for past history and systems review including a patient profile, social information,

psychological questioning and an index of depression questionnaire.⁵ Since August 1971, we have been evaluating a new shorter automated history available via computer terminal with the patient directly supplying the input and the immediate availability of a high-speed printout. We are presently returning to a more complete history questionnaire completed by the patient with branching logic programmed to a Mag Care IBM typewriter and initiating a programmed physical examination (Dr. Kanner, University Kentucky),⁶ programmed by Dr. Ed Alexander of Riverside Hospital, Newport News, Virginia.

We have used a multi-phasic health screening unit, the Augusta Health Testing Unit⁷ within the hospital to provide a significant portion of our routine data base. The technician coordinators have learned all of the health testing unit procedures and the radiologist checks the data for reliability. The physical testing includes height, weight, and percentage of variation from normal, pulse, bilateral blood pressure, upper extremities, eye testing, including extraocular muscles, acuity, ocular tension (applanator) and checked by Schiotz if abnormal. Also, stereognosis and color vision are checked. There is gross examination of ears and tympanum and audiometry checked by Weber's test if abnormal. There is examination of mouth, tongue, and oropharynx. In the neck there is check for carotid bruit, lymph nodes and thyroid enlargement. Chest examination includes vital capacity, timed vital capacity and peak flow rate recorded as percent of predicted. An ECG and chest x-ray are routinely available. Neuromuscular testing includes cranial nerves II-XI (Except X), equilibrium (Romberg with eyes closed) and Babinski if the Romberg is abnormal. The long tracts are examined for vibratory sense and the dorsal-plantar flexors are checked and, if abnormal, deep tendon reflexes, ankle jerk and knee jerk are recorded. Examination of the extremity includes gross examination for deformity, pretibial edema, and the pulses are checked bilaterally (radial, posterior tibial, dorsalis, pedis), and notation is made if varices are present.

The routine laboratory information obtained by the Augusta Health Testing Unit included HGB, WBC, Urinalysis, Fasting Blood Sugar, BUN, Cholesterol, Uric Acid, total protein, SGOT, and alkaline phosphatase.

A comprehensive care type of flow sheet⁸ has been developed covering the usual parameters for most patients who have malignant disease. The flow sheet, a form of progress note, compares informa-

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tion over a period of time including weight (percent of predicted), vital signs, medications, blood values, urine values, chemistries, pulmonary studies, x-ray, nuclear, patient status, index of depression, etc. The flow sheet could serve very usefully for any ambulatory care setting. A flow sheet is prepared on every patient receiving radiotherapy and for all patients referred to the Department of Radiology for consultation.

As part of our routine data base, a resumé of all previous hospitalizations is made using a physiological testing data sheet designed by Drs. Cross and Bjorn of the PROMIS LAB, Hampden Highlands, Maine.⁹ Physical findings are recorded under the objective note of different problems in the structured progress note.

It is not within the province or the intent of our community cancer care model to pursue the diagnosis and management of all problems, although many non-cancer problems are resolved during radiotherapy. Rather, the approach is to manage the prime problem of carcinoma and be assured that we are not "treating out of context," one of the most common errors we encounter in cancer management. Our radiotherapy technicians act as coordinators of patient care for the radiotherapist and the referring physician. It is a reassuring experience for the cancer patient to know that he will never be deserted and that he or she would be able to get through at any time to technician, radiologist, or physician concerning his problem. The trained radiotherapy technician functions as coordinator of patient care assuring follow-up care using the structured progress note³ to communicate the patient's problem to the physician.

Many incidental problems arise during the course of radiotherapy. For every problem listed there is a dated, numbered, titled, structured progress note. When the relationship of problems becomes obvious they may be grouped under one problem number. We have used the designation 1A, 1B, 1C, 1D, if specific separate problems are present but related; for example, the patient with #1A Carcinoma of the Breast, #1B Metastatic lesion to the lumbar spine and #1C Recurrent ulcerated neoplastic lesions of the anterior chest wall.

THE PROBLEM-ORIENTED MEDICAL RECORD AND TEAM MEDICINE

Most patients are ambulatory and a final problem list is prepared at the termination of therapy usually at 4 to 8 weeks. Our policy in this community cancer service is to follow patients indefinitely. Keeping well-ordered, problem-oriented medical records makes it easy to care for a patient with a new problem. With a good baseline of information, we are able to make valid assessments and plans in patient management in much less time.

Because of the systematized presentation of the

Problem-Oriented System including the problem list, the plans for each problem through a structured progress note, the availability of a flow sheet, and resumé sheet with physiological and physical examination data, the means for ready review and auditing is available.

A specialized record has been developed which provides a complete problem list of active and inactive problems as an index to the progress notes on the patient. All progress notes are numbered, dated, and titled according to the problem. A statement of the patient's understanding of the problem is recorded. All objective information concerning the problem is listed. An assessment or impression or discussion of the problem is recorded either by the technician or physician and this usually occurs when the physician reviews the information collected by the technician.

The cancer care technicians work directly with the radiologist who must constantly audit performance. Together, the Cancer Care Team of Physician Radiologist and Cancer Care Technicians work out an assessment of the cancer problem and review together the stage of the disease and the role of different methods of treatment (radiation, surgery, chemotherapy, endocrine, immunotherapy).

Routinely, we use a T.N.M. system (Tumor, Node, Metastases),¹⁰ the American Joint Commission or the International Union against Cancer for Cancer Staging. Proceedings of the National Cancer Conferences¹¹ often help us in prognosis with survival expectancy information by stage and treatment. The third edition of *Clinical Oncology* by Dr. Philip M. Rubin and Dr. Richard Bakemeier published by the American Cancer Society is our basic guide to a multiple disciplinary approach to cancer care.¹²

A library is available in the department. No attempt is made to have the technicians memorize. Rather, technicians are encouraged to return again and again to the texts. The Cancer Care Technicians have immediate access to a Hospital librarian who provides reprints on all subjects from local or regional library sources. Pertinent reprints are often added to patients' records. On more common cancer treatment problems, an excellent reprint library is in development in the department by the technician on Hodgkin's Disease, Cancer of the Breast, etc.

Pharmacology is constantly checked through the Physicians Desk Reference (P.D.R.) and 2nd Edition of the *AMA Drug Evaluation*.¹³ When multiple drugs are listed on the flow sheet, the cancer care technician lists the drugs and records the relationships, compatibilities, and precautions and this data becomes part of the patient record.

The Cancer Care Technicians write the prescription which is then checked and signed by the physician. When certain prescriptions are used repeat-

edly, several are typed in advance.

The physician and technician work together on the treatment plan concerning the amount of radiation to be delivered. Unusual problems will often bring the radiation physicist to help provide calculations and do phantom studies to help determine amounts of radiation delivered to margins of areas treated and to help on surface spacing of portals of treatment to be matched, etc. The physicist's data is also recorded, numbered, dated and titled under the Cancer being managed. It has also been of value to maintain a separate record with a listing of different physic treatment problems that may have general application. All the treatment team review with the physicist as he presents his data and often help in physic data collection. The physicist often gets to know the patient and all his problems which may relate to the physicist's input to the treatment problem such as anatomical variation in or adjacent the treatment portal.

If preliminary data indicates an associated psycho-social problem through a positive Index of Depression⁵, the cancer care technician with patient agreement and physician direction calls on a hospital based social worker to determine social, financial, family or psychological needs. The social worker enters the record with a numbered, dated, titled progress note, and has the resource of a Regional Mental Health Clinic.

THE PATIENT POPULATION

The defined patient population for the community cancer care model is all patients referred for radiotherapy. The technician cancer care coordinators on a weekly basis have provided a listing of the hospital total cancer experience. This list is obtained from the radiotherapy experience, all patients being seen for follow-up, from admissions all patients with a past diagnosis of cancer who may be in the hospital for another problem and all new diagnoses of cancer which have been made during the week up to the time of a weekly patient management conference.

Since applying the problem-oriented system to all patients from January 1969 and projected through 1973, there have been 1,273 patients with a diagnosis of cancer and 904 for radiotherapy.

Approximately 16,432 treatments have been delivered. There have been 51 radium applications to the body and cervix of the uterus. The follow-up visits are approximately 500 for 1973. The weekly cancer experience for 1972 was an average of 44 patients with a diagnosis of carcinoma and the weekly total hospital experience has varied from 30 to 60 patients each week. On a daily average (1974), there are 17 patients seen for radiotherapy and 2 patients seen each day in follow-up. The number of follow-up patients has doubled since 1969 and is constantly increasing.

PATIENT CARE REVIEW

On a weekly basis, all records of patient care are reviewed. Ordinarily on audit of our problem-oriented record, a reviewer can obtain a grasp of the patient's problems, management and current status within approximately 90 seconds. A minimum of 8 minutes has been required on the comparable source-oriented record in our hospital to determine the major problems and sometimes it is not possible to find out all the patient's problems from the source-oriented record.

A weekly Oncology Meeting provides for a multiple disciplinary review of the information collected and the approach to therapy. Besides the team from radiotherapy, including the technician cancer coordinators, physicist, radiologist, Tumor registry technician, representatives of out-patient and in-patient nursing and social worker, staff physicians representing medical oncology, pathology, surgery, ob-gyn and any other members of the medical or surgical staff who may have a cancer problem or are interested in providing an input also are invited to attend this meeting.

COMMUNITY RADIOTHERAPY EQUIPMENT

The Edith Rhoades Saunders Memorial Therapy Suite has a full range of radiation quality from superficial radiotherapy HVL 1 mm. al., a conventional deep (260 KVP) unit HVL 2.3 mm. Cu and a uniquely designed prototype double-headed Cobalt-60 Teletherapy unit with fixed beam radiotherapy. This Cobalt-60 Teletherapy machine called Janus II was designed and developed by Ulrich Henschke, M.D.,¹⁴ F.A.C.R., now at Freedman Hospital at Howard University in Washington, D.C. Basil Proimos, Ph.D., aided in the design and physics calculations. Dr. Proimos pioneered the development of Janus II at the Greek Anticancer Institute, in Athens, Greece. Felix Mick of the Bronx, New York built and assembled all the initial models in North America and Asia. Our experience with this innovative approach to Cobalt-60 Teletherapy has demonstrated this new development to be a highly efficient unit with superior beam shaping. The Janus II has been reliable and is available at considerably lower cost than conventional Teletherapy units, and provides a solution to most common radiotherapy problems in the community.

COMMUNITY CENTER AND REGIONAL THERAPY CENTER

In the solution of complex cancer problems, it is also often necessary to consult with other larger cancer centers and regular use is made of the radiotherapy centers in Portland, Maine, Boston, New York, Washington, D.C., and Dublin, Ireland. Drs. Sidney Lowry and J. Howard Hannemann are readily available for consultation at the Southern Maine Radiation Therapy Institute. Dr. Fernando

Bloedorn and the gynecologic oncologists, Drs. George Mitchell and Douglas Marchant, at the Tufts University New England Center Hospital in Boston have provided help with complicated gynecological tumors. We cooperate with the Children's Medical Center, Boston, in the management of leukemia patients from our region who may need supportive radiotherapy. For some unusual cancer problems, we have consulted with Dr. Giulio D'Angio at the Memorial Hospital for Cancer and Allied Disease in New York and in Washington, D.C. with Dr. Ulrich Henschke at Freedman Hospital for still other special types of radiation problems. Dr. Michael O'Halloran, Director and Dr. Michael Moriarity, Teaching Radiotherapist at the Irish National Cancer Center, St. Luke's Hospital, Dublin, Ireland, have helped with radiotherapy techniques and technician training. The problem-oriented system makes it possible for us to consult intelligently and to provide quickly a maximum of clinical information when we are seeking consultation help from another center.

PATIENT EDUCATION

Very quickly the patients begin to understand the problem-oriented system. While we do not volunteer the information of the diagnosis of cancer to every patient, we have adopted the policy of answering truthfully all questions asked by the patients. A book "About Cancer"¹⁵ is made available to all patients. In fact, with many intelligent patients at the completion of therapy, we provide a listing of their problems, especially if they will be travelling out of Maine, usually to Florida, or out of the country. Thus, other physicians will be able to respond quickly to new problems or recurrence of an old problem on the basis of well-structured, problem-oriented information.

We have had no difficulty providing to almost all patients copies of their comprehensive flow sheets containing medication lists, lab values, and other parameters, with copies for themselves as well as their physicians. The patients and referring physician have responded well to this approach and often the physician and patient are saved considerable time in patient care.

THE CANCER CARE TECHNICIAN AND PATIENT FOLLOW UP CARE

The philosophy has also been adopted that any patient with a malignant disease will be followed indefinitely and not just through tumor registry follow up. Generally, during the first year, the patient may be seen monthly for the first 3 months, at 3 and 6 month intervals and then annually. The patient is instructed that if he or she is not able to contact their own physician they may contact the technician cancer coordinators, and the radiologist-oncologist who will try to resolve a new problem during the

absence of the patient's own physician.

The technician cancer coordinator often help physicians in the community in gathering information and follow-up of cancer patients. Experience has demonstrated this approach to provide a ready means for a patient with cancer to receive prompt medical care. For example, the patient with breast cancer who does not have an appointment with her own physician for several weeks may be reluctant to call her doctor and yet has a new problem, such as "shortness of breath." The technician cancer coordinator will try to make an appointment at an earlier time often with better success than the patient, and may help the patient's family physician by obtaining necessary studies in the hospital such as chest x-ray in this case, demonstrating a pleural effusion secondary to the breast cancer. The technician coordinator then arranges for the attending physician to manage the problem. At all times the radiotherapy oncologist must audit the performance of his technician coordinators and makes the medical decision when needed by the technicians.

EVOLVING CANCER DETECTION ABILITY

The development of this problem-oriented system in a radiology department involved with cancer care provides capability of evaluating a patient quickly obtaining satisfactory information to treat with radiotherapy intelligently. Obtaining medical information has always been a problem in the smaller community hospital with considerable variation in the amount and quality of information provided to the radiotherapist. Usually on the same day of a consultation request a report can be provided. With sufficient data, therapy can often be initiated on the same day.

It is an easy transition for the patient care team to evaluate patients satisfactorily in a community cancer detection program. Thus far, we have taken a special approach to cancer of the breast. The Department has long experience with the Egan technique of mammography.¹⁶ Cancer care technicians have received special training by Dr. Robert Egan at Emory University in Atlanta, Georgia. Special x-ray diagnostic equipment¹⁷ has been obtained and placed in the radiotherapy section to provide grid localizing films, regular radiography and mammography by the technician coordinators. Self examination of the breast is taught, a booklet for patient education is provided¹⁸ and the technicians examine the breasts and perform in addition "a total lymphatic examination" including axillae, supraclavicular, cervical, occipital, scalp, oropharynx, floor of mouth, abdomen (liver, spleen any masses), inguinal areas, extremities (for edema and epitrochlear and popliteal areas for nodes). The breast is then checked by the radiologist and there is now a team approach to evaluating the findings. The mammogram is available to compare with the physical

findings and if surgery is performed the results further correlated. If there is malignancy, the technician coordinators then arrange a "reach to recover," rehabilitation program for the patient with a mastectomy with the permission of the patient's physician. Already the technician coordinators have developed considerable skill in detecting breast and nodal masses and are constantly checked by the radiologist.

The technicians obtain cervical and vaginal pap smears and are gaining skill in vaginal and rectovaginal examinations. These studies are limited to those patients with a diagnosis of cancer (breast, head and neck) who have not had a pap smear, and performed in the follow-up of these patients with a diagnosis of cancer of the cervix and uterus.

We have not yet done proctosigmoidoscopy in the Radiology Department but fully intend to develop this skill with participation of our technician coordinators. Our tumor registry studies have indicated that our end-results in the treatment of cancer of the colon and rectum could be improved. In this community, rectal examinations and proctosigmoidoscopies have not been used widely enough.

TEACHING MEDICAL STUDENTS

With a cadre of such technical assistants, the Radiology Department in the Community Hospital can become an ideal teaching model of patient care in which the medical student can learn the Problem-Oriented System and become immediately involved in patient care.

Pre-medical and medical students have been introduced to the problem-oriented system in this community cancer care unit every summer since 1969.

The students have been taught by the technician cancer coordinators to collect data, perform physical examinations, and prepare the patient for radiotherapy. All students are designated as Research Assistants or Associates, depending on undergraduate or graduate student status. All students are treated in the same way. Student performances are audited the same as the technician cancer coordinators.

The student, technician, nurse, and medical student are encouraged to list patient problems at their level of understanding. The problem may be only a listing of a symptom, abnormal physical finding, abnormal laboratory report, etc. The complete structured progress note becomes a means of evaluating performance in patient care. The student is evaluated for thoroughness, efficiency, dependability, and logical approach to problem solution. During 1970-1971-1972, fifteen medical and pre-medical students spent several days to 12 weeks in our comprehensive cancer care model. It has not been surprising to find some academically successful medical students are clinically nonperformers. Some

pre-medical students and some liberal arts students have, at the end of 10 weeks, demonstrated better ability in this patient care system in all categories, thoroughness, efficiency, dependability, and logic than some of the medical students.

Besides being directly involved in patient care medical students, MEDEX and physician associates have an unusual opportunity for learning experiences in the Radiology Department. A departmental team of technicians has been established to perform IVP examinations requiring a continuing education program including instruction and experience with cardiopulmonary resuscitation, vena puncture, intravenous therapy and a constant review of emergency procedures in the case of reactions. Because of the close relationships with Nuclear Medicine, there are opportunities to examine and evaluate the thyroid, liver and spleen enlargements, etc. In the Radiology Department, the student has the unique opportunity to do rectal examinations under guidance. Daily, many normal rectal examinations are possible for the medical student functioning as the x-ray technician helping to place the rectal tube for a barium enema study. Also, experience in learning catheterizing for a cystourethrogram is a regular possibility.

The medical students have worked in different sections of the Pathology Department, hematology, chemistry, bacteriology, "wet nuclear medicine" and tissue pathology (gross and microscopic). The students have functioned as dieners at post mortem examination, and ideal opportunity to correlate the problems of the living with the findings after death.

After 3 years of 10-week summer experiences in the department, there is not much difference in performance of non-medical undergraduate, pre-medical students, and medical students at many levels when using the problem-oriented system except for better understanding of medical problem interrelationships by the more advanced medical students.

Because the system of teaching is based on performance and audit and learned behavioral procedural approaches to problem solving in patient care, the student who is thorough, reliable, efficient, and with analytical sense is the most successful.

SUMMARY

The Maine Institute of Continuing Radiologic Education has applied the Weed Problem-Oriented System to Community Cancer Care. Radiotherapy technicians are Cancer Care coordinators and are physician associates in a Cancer Care team headed by the radiologist.

Technicians obtain on all cancer patients a *broad data base*, a *list of all problems*, a *plan* for each problem, and *follow-up of all problems* using structured progress notes. Since up to one-fourth of patients seriously ill with cancer may still die from

another unrelated disease, the cancer therapist must know all other problems in order not to "treat out of context."

The Problem-Oriented Medical Record is communication for the cancer care team. The radiologist audits team performance. A multiple disciplinary physician review audits and adds to patient care.

The Community Cancer Care Clinic must have well-defined relationships to regional Cancer Centers. The Problem-Oriented System provides for intelligent and efficient consultation for complex problems.

The Cancer Care team has ability in cancer detection and integrates a community program for better cancer detection, treatment, rehabilitation, survival, and continuing cancer care.

Medical students are immediately involved with patient evaluation and care in the Community. The Problem-Oriented Record becomes for the student the tool to guide patient care and to provide ideal learning by doing and teaching by audit.

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WHO AND HOW TO TRANSFER

GEORGE W. HALLETT, M.D.

Through the cooperation and support of the Department of Health and Welfare, and at the recommendation of Comprehensive Health Planning, the Maine Medical Center (MMC) has now completed the development of Maine's Neonatal Intensive Care Center (NICC), thereby officially initiating the Regional Newborn Care Program for the State of Maine.

A. *Who to transfer to the NICC:*

1. A list of candidates to be considered for possible transfer would include cases of:
 - a) Respiratory Distress Syndrome
 - b) Birth Weight less than 1500 grams
 - c) Gestational Age less than 34 weeks
 - d) Infants of Diabetic Mothers
 - e) Neonatal Seizures
 - f) Suspected Sepsis, Meningitis, etc.
 - g) Persistent Cyanosis Without Respiratory Distress
 - h) Congenital Anomalies Requiring Observation for Neonatal Surgery
 - i) Congenital Heart Disease
2. The child who is having early respiratory distress should probably be transferred before moderate deterioration has commenced.

B. *How to transfer to the NICC:*

1. *Contact:* Call one of these physicians responsible for the care in the MMC Nursery:
 - a) Pediatric Resident — 871-2376 or 871-0111
 - b) John C. Serrage, M.D. (Neonatologist) — 775-4151
 - c) George W. Hallett, M.D. (Chief of Pediatrics) — 871-2376 or 871-0111
2. *Transportation:* This must be arranged at the hospital of origin. Transferral may be by incubator, in an airplane, by automobile, by ambulance, or by sending for a transport incubator maintained at various sites throughout the State.
3. *Environment:* Maintain the child in a stable environment before and during transfer, including heat and oxygen just sufficient to eliminate cyanosis.
4. *Medication:* An intravenous line is rarely necessary, but if bicarbonate seems indicated before transfer, pass an umbilical venous catheter, give bicarbonate, and remove the catheter. (Sodium bicarbonate can be given once to a baby who exhibits severe respiratory distress or asphyxia, the dose being 2 mEq/Kg of standard bicarbonate 7.5% or 8.4% solution mixed half and half with Dextrose in water and given by slow push over several minutes.) Blood gases need not be measured, as the baby is assumed to have both metabolic and respiratory acidosis.
5. *Personnel:* A registered nurse should accompany the infant to the NICC, whether transport is by air or by land.
6. *Please send:*
 - a) *Copies of the Obstetrical and Newborn charts* from the referring hospital. (Special transfer forms are available from the MMC, if desired.)
 - b) *Additional information* regarding events of delivery and subsequent therapy which is considered pertinent, such as: last menstrual period, estimated delivery date, maternal blood type, serology, Apgar score, Vit. K, eye prophylaxis, etc.
 - c) *Maternal Blood:* 10 cc oxalated
 - d) *Cord Blood:* 10 cc clotted. (It is a good general policy to collect an extra tube of cord blood at all deliveries and save it for a few days in a refrigerator in case of future need.)
 - e) *Identification Bands:* In addition, the mother should keep her hospital identiband after she is discharged, as it can be used as a source of positive identification when she visits her baby at the NICC.
 - f) *Consent Form* (signed): (A supply of these is available at the MMC.)
 - g) *X-Rays and Lab Data*
 - h) *Property:* List all hospital property, blood specimens, X-Rays, etc. accompanying patient.
 - i) *Parents:* Instructions for future contacts with parents, if possible.
 - j) *Baptism:* Do the parents wish it and/or has it already been done?

Special Article

Rheumatic Fever V: Prevention of Rheumatic Fever

The prevention of rheumatic fever can be divided into two aspects: primary and secondary.

Primary prevention entails the adequate diagnosis and treatment of streptococcal infections among the general population with the goal of preventing initial attacks of rheumatic fever. Primary prevention has been discussed in connection with the treatment of streptococcal infections.

Secondary prevention entails identifying patients who have had rheumatic fever or who have rheumatic heart disease and administering adequate prophylaxis aimed at preventing further streptococcal infections and subsequent attacks of rheumatic fever.

Secondary prevention, or prevention of recurrences in rheumatic individuals, must depend on continuous prophylaxis rather than solely on recognition and treatment of acute attacks of streptococcal disease. In general, all patients who have a *well-documented* history of rheumatic fever or who show *definite* evidence of rheumatic heart disease should be given continuous prophylaxis. The risk of acquiring a streptococcal infection and the possibility of recurrent attacks of rheumatic fever continue throughout life. It is therefore suggested that the *safest* general procedure is to continue prophylaxis indefinitely particularly if rheumatic heart disease is present. Although recurrent attacks of rheumatic fever occur at any age, the risk of recurrence decreases with age. Some physicians may wish to make exceptions in certain of their adult patients but before exceptions are made the physician should carefully weigh the risks of acquiring streptococcal infection as well as the recurrence rate of rheumatic fever per infection and the consequence of recurrence. Individuals with a high risk of exposure to streptococcal infections include young men in military service, mothers of young children, school teachers, physicians, nurses, and allied medical personnel. Individuals with high recurrence rates of rheumatic fever per infection are those with rheumatic heart disease, those with a previous attack of rheumatic fever or those with multiple attacks. Adolescents are particularly likely to be delinquent in their prophylaxis so that careful follow-up of patient compliance is essential in this age group.

Prophylaxis should be initiated as soon as the diagnosis of active or inactive rheumatic fever is made. Although the streptococcal infections are more prevalent in the winter and spring months, they can occur at any season and prophylaxis

should be continued during the summer as well.

Before initiating continuous prophylaxis in patients with active or inactive rheumatic fever, a full therapeutic course of penicillin; (as outlined under Treatment of Streptococcal Infection) should be given to eradicate streptococci.

CHOICE OF PROPHYLACTIC PROGRAM

Intramuscular benzathine penicillin G (1,200,000 units per month) is the method of choice for a prophylactic program since it is considerably more effective than oral methods. In a controlled study, patients on benzathine had a 10-fold reduction of streptococcal infection as compared with those on oral penicillin (0.4 as compared with 5.5 per 100 patient years).^{*} This greater effectiveness is of special value in patients with high risk of rheumatic recurrence, as specified above, and particularly in patients with rheumatic heart disease in whom recurrences are more dangerous. This advantage must be weighed in each patient against the discomfort and pain of the injection, which may cause some patients to discontinue the prophylaxis program.

ALTERNATE METHODS

Successful oral prophylaxis depends on the compliance of the patient, which may be poor even in those who appear to be cooperative. Most failures occur in patients who fail to ingest the drug regularly. Patients should receive careful and repeated instructions on this point from the physician.

Sulfadiazine and oral penicillin are about equally effective. Streptococci resistant to sulfonamides have not been a problem in the prophylaxis of recurrences, and *rheumatogenic* streptococci resistant to penicillin have not been encountered. Patients on oral penicillin prophylaxis are more likely to harbor in their mouth penicillin resistant organisms which are of no importance for rheumatic fever but may be involved in infective endocarditis (*vide infra*).

SULFADIAZINE — ORAL

The usual dose of sulfadiazine is one gram once daily for patients over 60 pounds and 0.5 grams for patients under 60 pounds. Reactions are infrequent and usually minor but rash may occur. Long acting sulfadiazine should be avoided because of a high incidence of side effects.

^{*}Prevention of Rheumatic Fever American Heart Association Bulletin P.C. EM113, 1970.

Continued on Page 189

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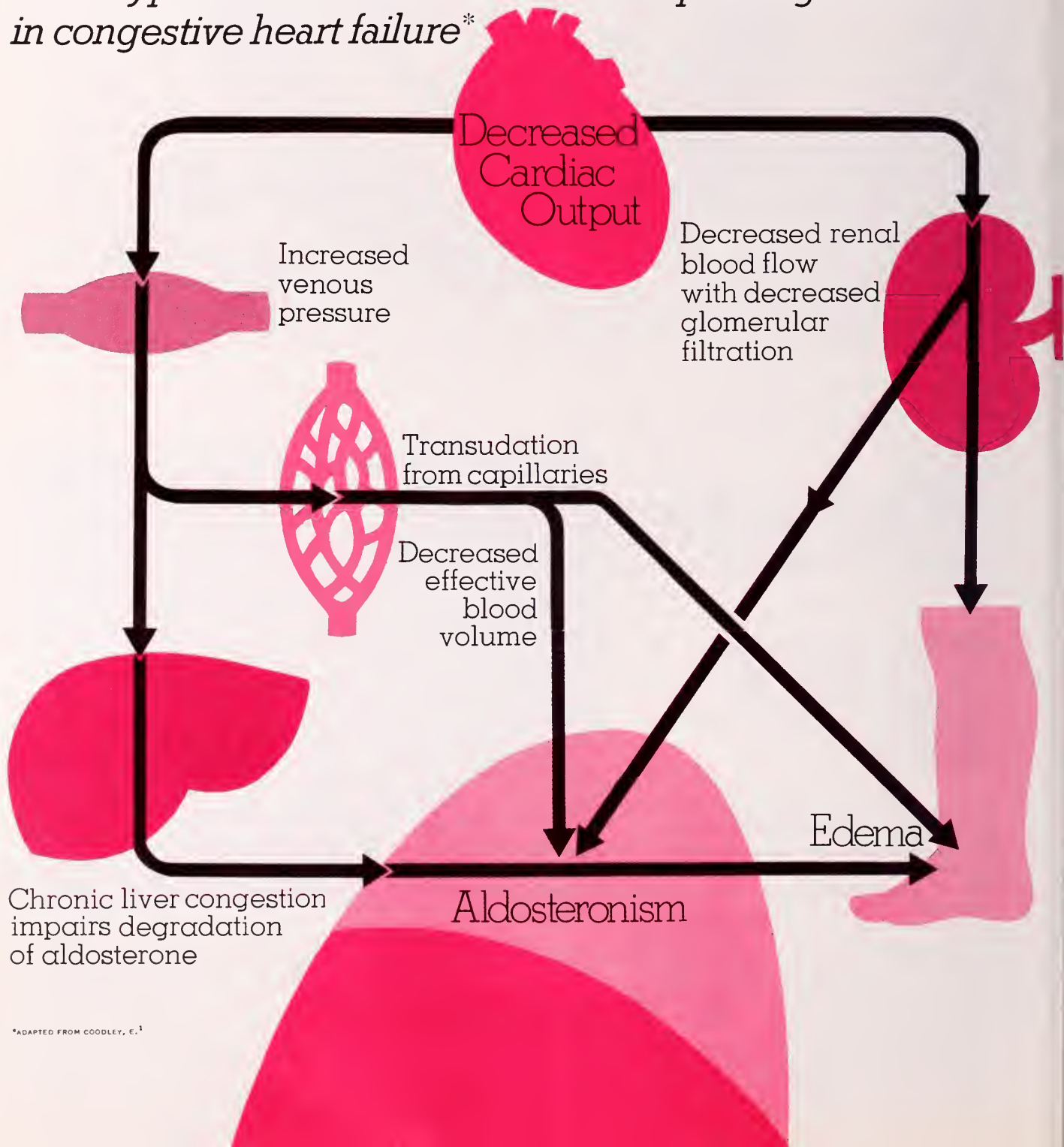
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- Aldactone plus "A.D.D." schedule minimizes potassium deficiency and potentiates effect of "add-on" diuretic.²
- Avoids acute volume depletion and aldosterone rebound.²

3. As a daily diuretic in combination with a daily dose of a thiazide

- Permits daily additive diuretic effect while maintaining potassium balance.

Indications—Essential hypertension; edema or ascites of congestive heart failure, cirrhosis of the liver and the nephrotic syndrome; idiopathic edema. Some patients with malignant effusions may benefit from Aldactone (spironolactone), particularly when given with a thiazide diuretic.

Contraindications—Acute renal insufficiency, rapidly progressing impairment of renal function, anuria and hyperkalemia.

Warnings—Potassium supplementation may cause hyperkalemia and is not indicated unless a glucocorticoid is also given. Discontinue potassium supplementation if hyperkalemia develops. **Usage of any drug in women of childbearing age requires that the potential benefits of the drug be weighed against its possible hazards to the mother and fetus.**

Precautions—Patients should be checked carefully since electrolyte imbalance may occur. Although usually insignificant, hyperkalemia may be serious when renal impairment exists; deaths have occurred. Hyponatremia, manifested by dryness of the mouth, thirst, lethargy and drowsiness, together with a low serum sodium may be caused or aggravated, especially when Aldactone is combined with other diuretics. Elevation of BUN may occur, especially when pretreatment hyperazotemia exists. Mild acidosis may occur. Reduce the dosage of other antihypertensive drugs, particularly the ganglionic blocking agents, by at least 50 percent when adding Aldactone since it may potentiate their action.

Adverse Reactions—Drowsiness, lethargy, headache, diarrhea and other gastrointestinal symptoms, maculopapular or erythematous cutaneous eruptions, urticaria, mental confusion, drug fever, ataxia, gynecomastia, inability to achieve or maintain erection, mild androgenic effects, including hirsutism, irregular menses and deepening voice. Adverse reactions are infrequent and usually reversible.

Dosage and Administration—For essential hypertension in adults the daily dosage is 50 to 100 mg. in divided doses. Aldactone may be combined with a thiazide diuretic if necessary. Continue treatment for two weeks or longer since an adequate response may not occur sooner. Adjust subsequent dosage according to response of patient.

For edema, ascites or effusions in adults initial daily dosage is 100 mg. in divided doses. Continue medication for at least five days to determine diuretic response; add a thiazide or organic mercurial if adequate diuretic response has not occurred. Aldactone dosage should not be changed when other therapy is added. A daily dosage of Aldactone considerably greater than 75 mg. may be given if necessary.

A glucocorticoid, such as 15 to 20 mg. of prednisone daily, may be desirable for patients with extremely resistant edema which does not respond adequately to Aldactone and a conventional diuretic. Observe the usual precautions applicable to glucocorticoid therapy; supplemental potassium will usually be necessary. Such patients frequently have an associated hyponatremia—restriction of fluid intake to 1 liter per day or administration of mannitol or urea may be necessary (these measures are contraindicated in patients with uremia or severely impaired renal function). Mannitol is contraindicated in patients with congestive heart failure, and urea is contraindicated with a history or signs of hepatic coma unless the patient is receiving antibiotics orally to "sterilize" the gastrointestinal tract.

Glucocorticoids should probably be given first to patients with nephrosis since Aldactone, although useful for diuresis, will not directly affect the basic pathologic process.

For children the daily dosage should provide 1.5 mg. of Aldactone per pound of body weight.

References: 1. Coodley, E.: Consultant 12:106-107, 109, 111, 113, 115 (July) 1972. 2. Thorn, G. W., and Louler, D. P.: Am. J. Med. 53:673-684 (Nov.) 1972.

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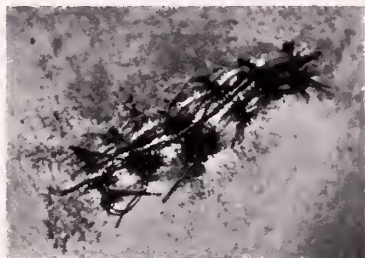
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President
Maine Medical Association
1974-1975



JOHN B. MADIGAN, M.D.

John B. Madigan, M.D. of Houlton, Maine became the 125th President of the Maine Medical Association at the 121st annual session banquet on June 17, 1974. He has represented his District on the Executive Committee of the Maine Medical Association since 1970.

Dr. Madigan was born in Houlton on May 11, 1917, son of James Cottrill and Doris Waterall Madigan. He was graduated from Georgetown University in 1938 and received his medical degree from Tufts University School of Medicine in 1942. He served a rotating internship at the Springfield Hospital in Massachusetts from 1942 to 1943 and then served in the U. S. Army for three years as a Captain. In 1946, he served a residency at the Springfield Hospital and then located in Houlton in 1947.

He is a member of the Aroostook County Medical Society, the Maine Medical Association, and the American Medical Association. He is a former President of the Aroostook Tuberculosis Association, a member of the Maine Chapter of the American Academy of Family Physicians, a former member of the Houlton Town Council, and the N.E. Regional Medical Advisory Board, and is a Board Director of the Maine Health Planning Council, the Aroostook Health Services, Inc. and the Cary Memorial Library.

Dr. Madigan was married in 1952 to the former Mildred Moriarty of Quincy, Massachusetts and they have seven children.

Executive Committee Members Elected at the
121st Annual Session of the Maine Medical Association
Kennebunkport, Maine June 15-18, 1974

President
JOHN B. MADIGAN, M.D.
Houlton

Seventh District
HERBERT J. WRIGHT, JR., M.D.
Lewiston

President-elect
EUCLID M. HANBURY, JR., M.D.
Belfast

Eighth District
THORNTON W. MERRIAM, JR., M.D.
Bangor

Speaker of the House
GEORGE W. BOSTWICK, M.D.
Newcastle

Third District
RICHARD C. LECK, M.D.
Executive Committee Chairman
Bath

Dr. Euclid M. Hanbury, Jr. was elected President-elect. Dr. Richard C. Leck was re-elected to the Executive Committee (Third District) for a three-year term and elected to serve as Chairman for 1974-1975. Dr. Herbert J. Wright, Jr. was elected to the Executive Committee (Seventh District) for a three-year term and Dr. Thornton W. Merriam, Jr. was re-elected (Eighth District) for a three-year term. Dr. George W. Bostwick was re-elected Speaker of the House of Delegates.

DR. HANBURY of Belfast, Maine served on the M.M.A. Executive Committee for the Sixth District (Hancock, Washington, Waldo) from 1971 to 1973, and as Chairman for 1972-1973.

Dr. Hanbury was born in Portsmouth, Virginia on February 14, 1927, son of Euclid M. and Blanche C. Hanbury. He attended Virginia Military Institute in 1943-44, Hampden-Sydney College in 1947, Duke University in 1948 and received his medical degree from the University of Virginia Medical School in 1952. He interned in medicine and surgery at the Royal Victoria Hospital in Montreal from 1952 to 1953, was a Special Fellow in Medicine and Resident Fellow in Thyroid Physiology at the Sloan-Kettering Institute in New York from 1953 to 1954, was Assistant Resident and Research Fellow in Surgery at the University of Virginia Hospital from 1954 to 1957, was a Fellow in Surgery at the Lahey Clinic in Boston from 1957 to 1958, and was a Senior Assistant Resident (1958-59) and Resident Surgeon at the University of Virginia Hospital (1959-1960). He was also an Instructor in Surgery at the University of Virginia from 1960 to 1963, Director of Medical Education at the Portsmouth General Hospital in Virginia from 1963 to 1968, Director of Isotope Laboratory at the Portsmouth General Hospital in Virginia from 1964 to 1968, and Co-director of the Renal Dialysis Unit at Portsmouth General Hospital in Virginia from 1966 to 1968. In 1968, Dr. Hanbury relocated in Belfast.

He is certified by the American Board of Surgery and is a member (and former Secretary-Treasurer) of the Waldo County Medical Society, the Maine Medical Association, the American Medical Association, the American Thyroid Association, the American Association for the advancement of Science and the New York Academy of Science.

He is presently Chairman of the M.M.A. Committee on Health Care Financing.



DR. HANBURY



DR. WRIGHT



DR. BOSTWICK

DR. LECK of Bath was born in Newark, New Jersey on February 12, 1931, son of Walter C. and Katharine T. C. Leck. He was graduated from the University of Chicago in 1955 and received his medical degree from the University of Chicago School of Medicine in 1959. Dr. Leck interned at the University of Chicago Clinics from 1959 to 1960 and served a residency in Pediatrics for two years. From 1962 to 1964, he served in the US Air Force as Captain and then served a residency in Pathology at the University of Colorado Medical Center from 1964 to 1968. Dr. Leck practiced at the St. Anthony's Hospital in Rock Island, Illinois and the Moline Public Hospital in Moline, Illinois from 1968 to 1970 when he located in Bath.

He is a member of the Lincoln-Sagadahoc County Medical Society, the Maine Medical Association and is certified by the American Board of Pathology. Dr. Leck has served on the M.M.A. Executive Committee since June 1972.

DR. WRIGHT of Auburn, Maine was born in Schoharie, New York on January 25, 1913, son of Dr. Herbert J. Wright, Sr. and Lillian Leslie Shafer Wright. He was graduated from Schoharie High School in 1929, Cornell University in 1934 and received his medical degree from Cornell University Medical College in 1938. He interned in Surgery at St. Luke's Hospital in New York and served residencies there as Assistant Resident Surgeon from July 1, 1939 to December 31, 1940, and as Resident Surgeon from January 1, 1941 to January 31, 1942. From 1942 to 1946, he served in the U.S. Army Medical Corps as a Captain, practiced at the Ellis Hospital in Schenectady, New York from 1946 to 1972 and the St. Clare's Hospital from 1949 to 1972. In April 1972, he located in Lewiston, where he is Medical Director at St. Mary's General Hospital and Consulting Surgeon at the Central Maine General Hospital.

He is a member of the Androscoggin County Medical Society, the Maine Medical Association, the American Medical Association, the Society of Abdominal Surgeons, the Pan Pacific Surgical Association, a Diplomate of the American Board of Surgery and a Fellow of the American College of Surgeons. Dr. Wright is also a member of the Medical Advisory Committee at the Veterans Administration Center in Togus, on the Board of Directors, Pine Tree Organization for Professional Standards Review and on the Executive Committee, Central Maine Family Practice Residency.

Dr. Wright is married to the former Mary L. Byram, R.N., and they have one daughter and two sons.

DR. MERRIAM of Bangor has served on the M.M.A. Executive Committee since 1971. He was born in Cleveland on December 30, 1929, the son of Thornton Ward and Alice H. Merriam. Following his graduation from Colby College in 1951, he attended Columbia University College of Physicians and Surgeons, receiving his medical degree in 1955. After his internship at the Mary Hitchcock Hospital, Dr. Merriam served a residency in medicine at Dartmouth Medical School from 1956 to 1959. He served in the U. S. Navy at Camp Lejeune, North Carolina from 1959 to 1961 as a Lieutenant Commander and in 1962 located in Bangor. He was certified by the American Board of Internal Medicine in 1963.

He is a member of the Penobscot County Medical Society, the Maine Medical Association, the American Medical Association and the American Society of Internal Medicine.

Dr. Merriam was married to the former Elizabeth Smart in 1953, and they have five children.

DR. BOSTWICK of Newcastle, Maine served as Vice Speaker of the House of Delegates from 1969 to 1971 and has served as Speaker of the House since 1971.

Dr. Bostwick was born in New Haven, Connecticut on June 6, 1927, first son of Dr. Wallace R. and Eunice Ellen Clapp Bostwick. Dr. Bostwick's father practiced medicine in New Jersey until his death in 1969.

Dr. Bostwick was graduated from Blair Academy in Blairstown, New Jersey in 1945. He served on active duty with the U. S. Naval Reserves as a PhM 3/c for two years, then continued with his education. Dr. Bostwick was graduated from Yale University with a B.A. degree in English in 1950 and received his medical degree from Yale University School of Medicine in 1954. He served a rotating internship at the Central Maine General Hospital in Lewiston from 1954 to 1955, and was Assistant Resident in Medicine, Pediatrics and Anesthesiology there in 1955. Dr. Bostwick has practiced in Newcastle since 1956.

He is a member (and Secretary-Treasurer) of the Lincoln-Sagadahoc County Medical Society, the Maine Medical Association, the American Academy of Family Physicians, the Maine Chapter of the American Academy of Family Physicians, the Maine Society of Anesthesiologists, the American Society of Anesthesiologists, Inc., the New England Society of Anesthesiologists, the International Anesthesia Research Society, and is a Diplomate of the National Board of Medical Examiners and American Board of Family Practice. His outside interests include skiing, philately, modern languages, and nap-time!

Dr. Bostwick is married to the former Anne Goodspeed of Wilton, Maine. They have three sons, Stephen Wallace, Richard Deane and William Kennedy, and one daughter, Elisabeth Fairgreaves.

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Although other kinds of penicillin may be used, buffered penicillin G is satisfactorily given in doses of 200,000 to 250,000 units once or twice daily. Better levels of penicillin may be obtained if penicillin is ingested half an hour before or at least one hour after a meal. But the necessity of administering penicillin in this manner in order to obtain adequate protection against streptococcal infection has not been established. Reactions are similar to those

with intramuscular penicillin but occur less frequently and tend to be less severe. A careful history concerning penicillin allergy should be obtained. For the exceptional patient who may be sensitive to both penicillin and sulfonamides, erythromycin can be used. Appropriate doses have not been established but 250 mgm. twice a day has been suggested. Tetracyclines should not be used because of the high number of strains of streptococci resistant to this antibiotic.

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PSRO in Maine

Pine Tree Organization for Professional Standards Review . . . assuring quality care for Maine

RICHARD T. CHAMBERLIN, M.D.

On October 30, 1972, the President of the United States signed Public Law 92-603 which may be cited as "The Social Security Amendments of 1972." Section 249F of Title II of this law provides the statutory basis for the formation of Professional Standards Review Organizations.

Although many provisions of this portion of Public Law 92-603 are controversial and are hotly debated, the House of Delegates of the Maine Medical Association in June of 1973 did adopt resolutions directing qualified compliance with the statute. The qualifications included the provisions that the statute should allow (a) freedom of choice between patient and physician, (b) freedom of choice by physician of the modes of therapy he may use, (c) ability to maintain confidentiality of the record of any patient's illness, and (d) liberal consideration for the welfare of the patient. The Executive Committee of the Maine Medical Association studied these points and following their favorable report on these issues, the House of Delegates voted in December of 1973 to reaffirm its position of qualified compliance with the statute.

At the direction of the Executive Committee of the Maine Medical Association, the Chairman of the Peer Review Committee of the Maine Medical Association has, working with others, been instrumental in the work leading to the incorporation of the Pine Tree Organization for Professional Standards Review, Inc. on May 8, 1974.

Membership in this Maine Organization is free to all licensed Maine physicians, providing them with a significant role in the shaping of the future of health care in Maine. By participation in this Maine organization, you will be adding your voice to those that will be establishing the necessary standards and criteria for determining the quality of care given to Maine people.

The primary emphasis of the Pine Tree Organization for Professional Standards Review is on the assurance of quality of care. To determine the quality of care, the Pine Tree Organization will build upon the existing Peer Review Committees, using their experience and knowledge of local medical practices. The standards and criteria, which will be used to determine the necessity of care, the quality of care provided and the proper setting for the required care, will be established according to Maine physicians' practices, thereby assuring that the decisions made on the quality of care provided are in the best interest of Maine patients and physicians.

The governing body of the Pine Tree Organization is composed primarily of Maine physicians. The eleven member Board of Directors consists of five M.D.'s, three D.O.'s and three non-physician members representing the three major third-party payors in Maine. During the early stages of the PTOPSR, it will be working on plans to develop:

- * a means of evaluating the effectiveness of the hospital Utilization Review Committees
- * a methodology for developing and adopting criteria and standards for the review, and
- * a plan for integrating professional standards review into continuing medical education.

The Pine Tree Organization for Professional Standards Review has received the endorsement of the Maine Medical Association and the Maine Osteopathic Association.

The Board of Directors of the Pine Tree Organization invites all physicians licensed to practice in Maine to join the organization. A membership application follows. Please complete it and forward it to Pine Tree Organization for Professional Standards Review, Inc. c/o Richard T. Chamberlin, M.D., President, P.O. Box 706, Augusta, Maine 04330.

ADDENDUM

NOTE: The House of Delegates of the Maine Medical Association voted on June 16, 1974 to continue qualified support of PSRO development in Maine, adding the recommendation that members of the Maine Medical Association should join the Pine Tree Organization For Professional Standards Review, Inc. The American Medical Association's House of Delegates passed the following resolution on June 26, 1974 in Chicago:

"Resolved, That this House of Delegates instruct the Board of Trustees of the Association to direct its efforts to achieve constructive amendments to the PSRO law and to ensure appropriate regulations and directives, with particular effort directed at amending those sections of the law which present potential dangers in the areas of confidentiality, malpractice, development of norms, quality of care, and the authority of the Secretary of HEW; and be it further

"Resolved, That the Association should continue its efforts to achieve legislation which allows the profession to perform peer review in accordance with the profession's philosophy and the best interest of the patient; and be it further

"Resolved, That individual state associations which elect non-participation shall not be precluded from such a position by this Association's policy statement, but should be urged to develop effective non-PSRO review programs which embody the principles endorsed by the profession as constructive alternatives to PSRO; and be it further

"Resolved, That if ongoing evaluation of the PSRO program reveals that it does, in fact, adversely affect the quality of patient care, or conflict with the Association policy, the Board of Trustees be instructed to use all legal and legislative means to rectify these shortcomings."

PINE TREE ORGANIZATION FOR PROFESSIONAL STANDARDS REVIEW, INC.

MEMBERSHIP APPLICATION

I, _____, presently admitted to practice medicine in the State of Maine, hereby apply for membership in the Pine Tree Organization for Professional Standards Review, Inc.

I understand that there are no financial commitments (i.e. dues) as a condition to my membership and that my membership shall continue as long as I am licensed to practice medicine in the State of Maine or until I voluntarily elect to resign. Resignation may be made at any time in writing directed to the Clerk of Pine Tree Organization for Professional Standards Review, Inc.

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Drug Therapy Reviews

Rational Use of Psychotropic Drugs

I. Hypnotics

DAVID J. GREENBLATT, M.D. and RUSSELL R. MILLER, Pharm. D., Ph.D.

"Insomnia" is the inability to sleep properly. Most patients with insomnia have difficulty falling asleep, do not sleep as long as they would like, or do not feel refreshed upon awakening. There are no fixed criteria for defining insomnia since it is a purely subjective symptom. Hypnotic drugs are to insomnia as aspirin is to fever — they can provide symptomatic relief, but they do not treat the underlying cause. Far too often physicians prescribe hypnotic drugs without attempting to determine the etiology of the sleep disorder.

Insomnia can be a secondary manifestation of other obvious organic pathology, such as somatic pain, skeletal muscle spasm, hypoxia, pulmonary congestion, nocturnal cough, night sweats, nocturia, or hypoglycemia. In such cases symptomatic treatment with hypnotic drugs alone may be irrational or even contraindicated. When emotional disorders such as anxiety or depression cause sleep disturbances, it is equally important that the underlying disease be treated. Therapy of depression-induced insomnia with hypnotic drugs may exacerbate a patient's depressive illness.

Most hospitalized patients have difficulty sleeping. The possibility or reality of serious organic disease, the prospect of an uncomfortable diagnostic procedure, or just the novelty of the hospital environment, can provoke enough emotional discomfort to disrupt sleep. Because medical care is a round-the-clock endeavor, hospitals are inherently unconducive to normal sleep. Physicians and nurses take vital signs, perform physical examinations, give medications, and draw blood samples at all hours of the night. Paging systems blare, monitors beep, respirators hiss, and chest tubes gurgle with no regard for bedtime. If the physician is certain

that insomnia is not secondary to causes described above, administration of hypnotic drugs to hospitalized patients is usually justified. Their sleep disorder is temporary and reversible; moreover the drug, the dosage, and frequency of administration are regulated entirely by professional staff.

In contrast, administration of hypnotic drugs to outpatients is much more problematic. No longer does the physician control the dosage and frequency of administration. Misuse, abuse, and over-dosage are important hazards of ambulatory hypnotic drug use which do not exist in the hospital. Less serious but more common is the syndrome of hypnotic drug "dependence" which insidiously develops in many outpatients who chronically use hypnotics. This syndrome can be described as the continued habitual use of a hypnotic drug by patients who feel they cannot sleep without medication. It is not a true physiologic addiction, but rather a compelling psychological reliance upon a drug for sleep. Hypnotic drug dependence is partly related to the frequency of physician follow-up. Patients who receive large "refill p.r.n." prescriptions and who do not return to their physician for frequent reassessment have a significant chance of developing hypnotic dependence.¹

When ambulatory patients experience temporary insomnia because of stressful life events, hypnotic drug therapy is reasonable provided the physician prescribes a small number of pills and insures frequent follow-up. Chronic, unexplained insomnia deserves thorough medical and psychiatric evaluation. Refillable prescriptions for large numbers of pills are seldom justified under any circumstances.

PHARMACOLOGIC PROPERTIES

Hypnotic drugs are non-specific central nervous system (CNS) depressants. Appropriate doses induce sleep. Progressively larger doses produce deep sleep, general anesthesia, coma, and death. Most hypnotic drugs are relatively lipid-soluble at physiologic pH, and thus are rapidly and extensively distributed to body tissues, including the brain.²⁻⁴ Furthermore, most sleep-inducing drugs are biotransformed by the liver to pharmacologically inactive metabolites. Physicians are traditionally taught that hypnotics are "short-acting" agents, rapidly metabolized and excreted such that very little

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Address reprint requests to Dr. Miller at Box 420, New England Medical Center Hospital, 171 Harrison Ave., Boston, MA 02111.

TABLE 1

DOSAGE AND WHOLESALE COST OF HYPNOTIC DRUGS

Generic Name	Usual Dose Range	Trade Name(s)	Unit Dose (mg)	Price per 100 Dose Units
<i>"Short-Acting" Barbiturates</i>				
Pentobarbital	100-200 mg	(generic)	100	\$0.95*
		Nembutal	100	2.38
Secobarbital	100-200 mg	(generic)	100	0.85*
		Seconal	100	2.16
<i>Chloral Derivatives</i>				
Chloral Hydrate	0.5-1.5 gm	(generic)	500	\$1.15*
		Felsules	500	4.20
			1000	4.20
		Kessodrate	500	1.75
		Noctec	500	5.00
		Somnos	500	4.04
Chloral Betaine	0.87-2.61 gm	Beta-Chlor	870	8.13
Trichloroethyl Phosphate (Triclofos)	0.75-2.25 gm	Triclos	750 (tablets) 100 mg/ml (liquid)	10.00 3.00/240 ml
<i>Piperidinediones</i>				
Glutethimide	0.5-1.0 gm	(generic)	500	3.60
		Doriden	500	5.79
Methypylon	200-400 mg	Noludar	200	5.11
			300	6.06
<i>Quinazolines</i>				
Methaqualone	200-400 mg	Optimil	200	4.20
			400	6.00
		Quaalude	150	3.95
			300	5.79
		Parest	200	5.30
			400	7.57
		Sopor	150	3.75
			300	5.35
		Somnafac	200	4.20
			400	6.00
<i>Acetylinic Alcohols</i>				
Ethchlorovynol	0.5-1.0 gm	Placidyl	500	6.59
			750	8.87
<i>Benzodiazepines</i>				
Flurazepam	15-30 mg	Dalmane	15	5.05
			30	6.06

*Indicates lowest price when many are quoted.

residual effect can be detected the day after a nighttime dose. This concept is both correct and incorrect, since the elimination pattern of most hypnotics is "biphasic."⁵⁻⁷ During the first few hours after peak blood concentrations are reached, the drug disappears from the blood rapidly; this is mainly due to tissue distribution rather than biotransformation. After distribution is complete, the disappearance rate is determined by the rate of hepatic metabolism, which is a much slower process. Thus, the clinical effects of pentobarbital, for example, may appear to "wear off" rapidly, but significant blood concentrations are detectable for days after a single dose.⁷ Physicians should remember that elderly individuals⁸⁻¹⁰ and those with severe liver disease¹¹⁻¹³ seem to have impaired drug-metabolizing capacities. This could partly explain the apparent "sensitivity" of such patients to CNS-depressant drugs.

Hypnotics are rapidly absorbed when administered in the fasting state. When given with food, however, the absorption rate and thus the onset of

clinical effects can be delayed.^{7,14} Since the *completeness* of absorption is probably not affected, this phenomenon is potentially dangerous. A subject who takes a sleeping pill in the non-fasting state may take a second dose several hours later because the first seems to have had no effect. Eventually both doses are absorbed, possibly producing excessive and prolonged CNS depression. Animal studies also suggest that certain antacids can impair the absorption of coadministered hypnotics.¹⁵ Sleeping medications therefore should be given on an empty stomach whenever possible.

Numerous *short-term* controlled studies show that all commonly used prescription hypnotic drugs (Table 1) are highly effective as symptomatic treatment for occasional insomnia.^{16,17} When given in adequate dosage, these drugs consistently reduce the time for onset of sleep ("sleep latency"), prolong the duration and quality of sleep, reduce the number of nocturnal awakenings, and leave the patient feeling well-rested and refreshed. Unfortun-

nately, physicians tend to be too conservative with dosage, sometimes leading to apparent drug "failure." Unless specific mitigating circumstances exist, therapy should be initiated with doses in the middle or high end of the ranges listed in Table 1. There is no consistent evidence that any one of these drugs is more effective than the others for short-term therapy of less than four or five days. Antihistamines (diphenhydramine, hydroxyzine, promethazine) are not listed because they are not hypnotics *per se*. Their non-specific sedative effects are actually a secondary pharmacologic property which is often exploited for sleep-inducing purposes.¹⁸ There is no evidence that antihistamines are "milder" or "safer" than traditional hypnotics; like most of the drugs in Table 1, antihistamines are metabolized by the liver. Since antihistaminic agents have anticholinergic effects, they carry the additional hazard of producing atropine-like toxicity, particularly in elderly individuals.^{19,20}

All commonly prescribed hypnotics can produce "hangover" — unwanted residual drowsiness or heavy-headedness experienced the morning after a nighttime dose. Depending on dosage, up to 15 percent of hospitalized hypnotic drug takers complain of hangover regardless of the particular drug. The frequency of hangover among ambulatory hypnotic users is much more difficult to determine, but probably is similar. A higher percentage of subjects, many of whom are asymptomatic, have impairment of reaction time, coordination, motor function, or intellectual performance the day after taking a sleeping pill. The dangers of this are obvious, particularly for individuals who operate automobiles or heavy machinery. Essentially 100 percent of hypnotic drug users have electroencephalographic (EEG) changes which persist for 12 hours or more after taking a hypnotic even though other demonstrable abnormalities of CNS function may be absent.

CHOICE OF HYPNOTIC DRUG

The preceding section suggested that available hypnotic agents do not differ significantly in short-term efficacy nor in the frequency with which they produce hangover. The rational choice of a hypnotic drug therefore depends upon the following other considerations.

Cost

The wholesale cost of hypnotics varies greatly among drugs (Table 1). Because of the pharmacists' dispensing fee, the cost to the patient is always greater. Drugs available by generic name are much less expensive than equivalent trade-name entities. Although price is an important consideration for outpatient drug prescribing, it should not govern the choice of agents for hospitalized patients. The price of any hypnotic drug is negligible compared to the

exorbitant cost of hospitalization. Furthermore, any monetary saving derived from a parsimonious choice of hypnotic drug is more than erased by the ordering of a single unnecessary laboratory test.

Abuse, Addiction, and Overdosage

Barbiturates and glutethimide are widely abused drugs. Daily ingestion of only three to four times the usual therapeutic dose can produce physiologic addiction. Most hospital physicians are aware of the potential gravity of overdosage with these drugs.²¹ Relatively small doses can produce deep coma and death. Methaqualone has recently become another popular drug of abuse,²²⁻²⁷ partly because it can produce a peculiar peripheral paresthesia ("buzz") which some individuals find pleasurable. Since ethchlorvynol and methyprylon are not widely used in clinical medicine, their hazards are difficult to assess. Limited reports, however, suggest that both drugs are abusable^{28,29} and can produce serious overdosage.³⁰ For unknown reasons, chloral derivatives are uncommonly abused and are rarely implicated in cases of intentional overdosage. The gastric irritant properties of most chloral derivatives might explain this. Flurazepam is probably the least hazardous of hypnotic drugs with respect to the danger of abuse and overdosage.^{31,32}

Drug Interactions

Enzyme Induction. Barbiturates and glutethimide stimulate the activity of hepatic microsomal drug-metabolizing enzymes.¹⁶ The clinical activity of other drugs metabolized by this enzyme system can be diminished when barbiturates or glutethimide are coadministered.³³ The dose of an oral anticoagulant might have to be increased, for example, in a patient who is started on a barbiturate (Figure 1). The greatest danger, however, occurs when an anticoagulant-treated patient *stops* taking a barbiturate. Unless the anticoagulant dosage is concurrently reduced, excessive hypoprothrombinemia and serious bleeding can occur. It is not established exactly which other drugs are influenced by enzyme induction to a clinically significant extent. Osteomalacia due to accelerated metabolism of vitamin D has been reported in a chronic user of glutethimide.³⁴

Enzyme induction due to methaqualone and ethchlorvynol is not adequately evaluated, but has been suggested by some reports.^{35,37} Chloral hydrate and flurazepam do not cause clinically important enzyme induction in man.

Protein-Binding Displacement. Chloral derivatives are metabolized first to trichloroethanol, then to trichloroacetic acid (TCA). TCA is tightly bound to plasma protein and can displace other protein-bound drugs from their binding sites. The result is an increase in the concentration of the pharmacol-

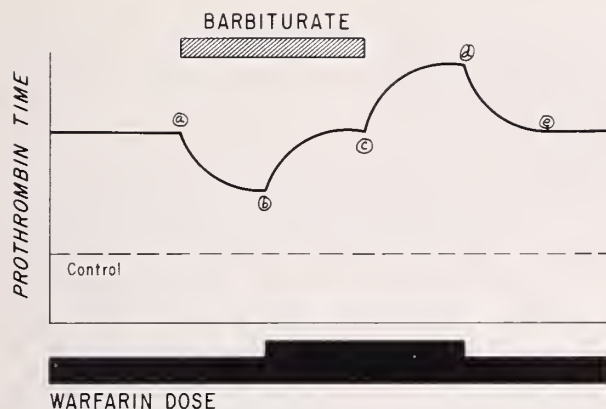


Figure 1. Effect of Barbiturate Administration on Oral Anticoagulant Therapy (Schematic)

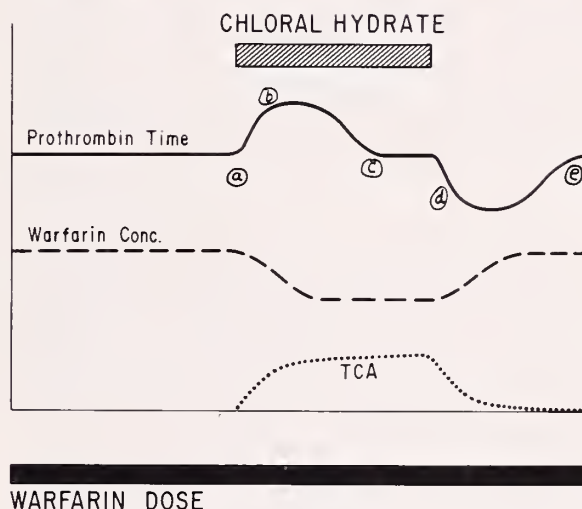
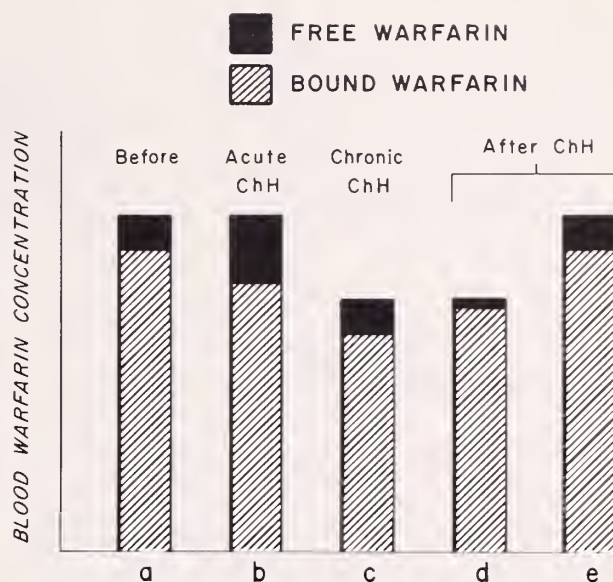
A patient on "stable" anticoagulant therapy, receiving a constant daily dose of warfarin, is started on a barbiturate hypnotic because of insomnia (point *a*). Due to hepatic microsomal enzyme induction by the barbiturate, warfarin activity is antagonized and prothrombin times fall toward control values. Increasing the warfarin dose (point *b*) compensates for enzyme induction and restores prothrombin times to the previous therapeutic range. When barbiturate therapy is stopped, thus removing the enzyme-inducing stimulus (point *c*), prothrombin times become excessively prolonged, possibly leading to hemorrhage unless the situation is corrected by the physician. Reducing warfarin dosage (point *d*) to the pre-barbiturate level restores therapeutic anticoagulation (point *e*).

ogically active unbound fraction of the displaced drug, and a transient potentiation of its clinical effect.^{38,39} Thus, transient excessive hypoprothrombinemia can occur when a chloral derivative is given to a patient receiving warfarin or bishydroxycoumarin (Figures 2 and 3). Other tightly protein-bound drugs such as diphenylhydantoin, phenylbutazone, or imipramine, could potentially interact with chloral derivatives in this manner, but clinically important interactions have not been adequately documented. No other hypnotic drugs cause protein-binding displacement.

Ethanol Potentiation. Any hypnotic drug produces additive CNS depression when coadministered with ethanol. Acute ethanol ingestion can "poison" hepatic enzyme systems and retard the metabolism of other drugs, including hypnotics.^{40,41} This raises the possibility of supra-additivity. Controlled studies, however, reveal that supra-additive effects of ethanol taken together with other CNS depressants are clinically minor.⁴²⁻⁴⁴ "Knock-out drop" effects have not been verified.

Dreaming

Normal individuals spend approximately 25% of sleeping time in the rapid-eye movement (REM) or dreaming stage of sleep. Barbiturates, glutethimide, and methypylon significantly reduce both total and percentage REM time.^{16,31,32,44} Prolonged REM deprivation causes increased "pressure" to



Figures 2 (top) and 3 (bottom). Effect of Chloral Hydrate Administration on Oral Anticoagulant Therapy (Schematic)

A patient on "stable" anticoagulant therapy, receiving a constant daily dose of warfarin, is started on chloral hydrate (ChH) because of insomnia (point *a*, top and bottom). Trichloroacetic acid (TCA), the major metabolite of chloral hydrate, displaces warfarin from protein-binding sites, increasing the blood concentration of unbound, pharmacologically active warfarin (point *b*, top), thus potentiating its hypoprothrombinemic effect (point *b*, bottom). Because the liver metabolizes the excess free warfarin, the effect is a transient one. During chronic chloral hydrate therapy (point *c*, top and bottom), total warfarin blood concentrations are smaller than before chloral hydrate, but unbound warfarin concentrations are the same. When chloral hydrate is discontinued (point *d*, top and bottom), the reverse happens — warfarin effect is transiently antagonized because unbound warfarin occupies the protein-binding sites previously taken up by TCA. Several days after chloral hydrate is stopped (point *e*, top and bottom), the pre-chloral hydrate situation is reestablished. Notice that the dose of warfarin was never changed.

dream. Thus, during chronic use of these drugs dreaming time can return toward normal because of

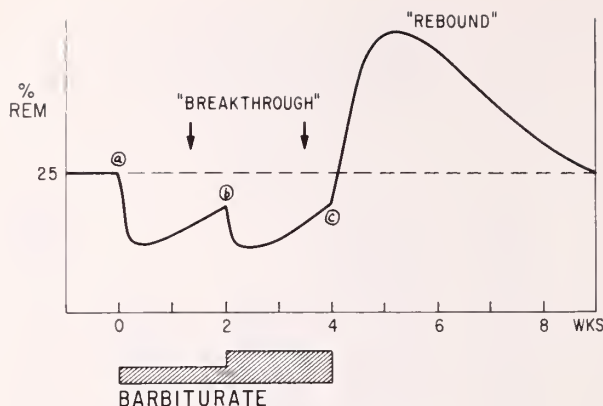


Figure 4. Effect of Barbiturate Administration on Rapid-Eye-Movement (REM) Sleep (Schematic)

A patient is started on a barbiturate hypnotic due to insomnia (point a). REM time is markedly decreased during the first few nights of barbiturate use, but returns toward the 25% baseline during 1 to 2 weeks of continuous use ("REM breakthrough"). During the breakthrough period the drug seems to lose its hypnotic effectiveness, causing the patient to increase the nightly dose (point b). Again REM time is depressed and sleep-inducing efficacy is temporarily restored, but the breakthrough phenomenon occurs again and the drug's efficacy diminishes. If the patient discontinues drug use (point c), "REM rebound" occurs, with greatly increased REM time. The rebound phenomenon can last for several weeks after the drug is stopped, and is often associated with nightmares, insomnia, and severely disordered sleep.

"REM breakthrough." This often coincides with diminishing drug efficacy, and causes patients to increase the dose. If the drug is discontinued, REM time becomes supranormal (Figure 4). The "REM rebound" phenomenon is frequently associated with nightmares, insomnia, and severely disordered sleep. Patients may return to drug use to suppress the unpleasant symptoms of REM rebound. Thus, dream suppression is an undesirable characteristic of barbiturates, glutethimide, and methyprylon, since it can lead to hypnotic dependence.⁴⁶ High doses of methaqualone also depress REM sleep. Ethchlorvynol is not adequately evaluated, and studies of chloral hydrate are conflicting.¹⁶ Flurazepam seems to produce only minor REM depression, with no rebound when the drug is withdrawn.^{31,32}

Long-term Efficacy

Although most hypnotics are effective for short-term, occasional use, nearly all are ineffective in inducing or maintaining sleep, or both, by the second week of daily administration.^{45,46} In controlled studies, chronic insomniacs who had been using hypnotics other than flurazepam for periods ranging from months to years had as much or more difficulty sleeping as did insomniac controls who were not using medication. The only documented exception is flurazepam, which continues to be effective after two weeks of daily use. Since flurazepam has rela-

tively minor effects on REM sleep compared to most other hypnotics, this could partly explain its long-term efficacy.

Drug Accumulation

Since the biotransformation of most hypnotic drugs is relatively slow, repeated nightly use could potentially cause drug accumulation and cumulative effects. The clinical importance of this, however, has not been established. The pharmacokinetics of flurazepam are unusual. Even after very large doses, flurazepam itself is barely detectable in blood. Its major metabolite (desalkylflurazepam), which has significant CNS-depressant activity, is immediately detected in blood, and disappears with a very long half-time exceeding 50 hours.⁴⁷ Even during chronic therapy flurazepam itself is barely detectable, but desalkylflurazepam accumulates to a significant degree and persists in the blood for many days after drug therapy is stopped.⁴⁸ Thus, flurazepam could also produce cumulative and/or residual clinical effects. Again, the importance of this is not established.

CONCLUSION

Generically prescribed barbiturates are inexpensive, but this is usually outweighed by their numerous hazards and disadvantages. Barbiturate use by outpatients can be justified only when cost is the overwhelming consideration. Administration of barbiturate hypnotics to hospitalized patients is not rational. Glutethimide is at least as hazardous as barbiturates and much more expensive; under no circumstances is it rational to prescribe this drug. Glutethimide and barbiturates are contraindicated in patients receiving oral anticoagulants. Methaqualone, methyprylon, and ethchlorvynol have no particular advantages, and thus their use can seldom be recommended. Flurazepam has the fewest disadvantages and should be the hypnotic of choice in most clinical circumstances. If drug cost is of major importance, generically prescribed chloral hydrate can be substituted provided the patient is not taking a coumarin anticoagulant.

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BLUE SHIELD CALLS FOR FEDERAL HEALTH CARE AID FOR POOR, CATASTROPHIC EXPENSES

Blue Shield called for enactment of Federal legislation to strengthen private health care coverage and extend government aid to the poor, near poor, and those faced with catastrophic medical expenses.

Ned F. Parish, President of the National Association of Blue Shield Plans (NABSP), testifying before the House Ways and Means Committee, told Congressmen that the concept for a totally tax-supported and government administered program is "a solution for which the problem no longer exists."

Parish commented that "health insurance is one of the most widely purchased items in our society," and that between 87 and 97 percent of the American people have access to health care coverage through the private sector and through government programs such as Medicare and Medicaid.

"We have built in America a private system which extends to the vast majority of the population and serves most of them quite well," Parish said.

A Louis Harris Poll recently conducted for the Senate Subcommittee on Inter-Governmental Relationships indicated only three percent of the public considers health care to be among the major concerns facing the nation today. "It is our position," Parish said, "that the public does not support radical restructuring of the health system or its financing."

Instead, the Blue Shield President said, Federal action is clearly necessary that would strengthen private coverage and at the same time eliminate problems that "can never be resolved without the active participation of government."

Parish added, however, "preemption of the industry would create more problems than it would solve. Simple solutions to complex problems are seldom adequate." He said Blue Shield advocates enactment of legislation in which government would have "a working partnership with our industry" in accordance with 10 basic principles. Among the principles are:

- Federal financing for coverage of the poor and medically indigent;
- catastrophic coverage tied to a program for basic benefits;
- effective regulation of carriers with respect to covered benefits and fiscal solvency;
- minimum standards for basic coverage as well

as access to supplemental coverage;

- maximum participation by the private sector;
- free choice between provider and patient and a competitive market among private health insurers and prepayment organizations; and
- free choice of health care delivery systems.

Parish added it is imperative that catastrophic coverage be integrated with a minimum basic program. In this regard, he specifically criticized the Long-Ribicoff proposal (H.R. 14079), calling it "simply another National Health Insurance proposal, but with a \$2,000 deductible."

"Catastrophic expense is a relative term," he said, adding that no free-standing catastrophic proposal should be enacted. He said such a program would be far too difficult and expensive to administer.

Parish said whatever proposal is finally enacted by Congress, "methods should be applied to meet specific objectives and needs, and should not be imposed on the entire population without regard to the vast differences in its needs, capacities, and preferences."

In addition, competition as it exists in the private health insurance industry has demonstrated advantages over a government monopoly, the Blue Shield leader said. Under a program totally financed and administered by the government, "there would be no recourse to dissatisfaction with the cost-effectiveness or the benefits . . . nor can the government administer NHI better than the best of the choices the public already has," Parish argued.

Answering charges that the private health care financing industry is guilty of making exorbitant profits, Parish noted, "about half of the industry is non-profit. Much of the rest consists of mutual companies which pay dividends only to their policy holders and . . . we are told that underwriting profit among the stock insurance companies is less than 1 percent."

He further indicated Federal taxes could be more effectively used in other social welfare areas which would in turn impact on the public health. "Other problems, such as housing, sanitation, diet, and education, which all impact on the over-all health of the American people, may be far more responsive to Federal interest," Parish suggested.

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County Society Notes

WASHINGTON

A regular meeting of the Washington County Medical Society was held in the Peavey Memorial Library, Eastport, Maine on Monday, March 25, 1974.

In the absence of the President and Vice-President, the meeting opened under the direction of Dr. Karl V. Larson, Secretary of the Medical Society.

Minutes of the last meeting were read and approved.

Letter read from Dr. Nelson W. Stott, Eastport, who said that one of his patients had been approached by a member of Expanded Child Care Service of Lubec. This patient had been told that if she would take her children to the Expanded Child Care Clinic, the cost would be much less, and they would get better care. Apparently the patient was approached more than once. Dr. Stott felt that this was somewhat unethical. Following the meeting, Drs. Robert G. MacBride and Stott called the patient in question, on a three-way hookup; the patient concurred with Dr. Stott's statements. The Medical Society therefore voted to have a letter sent to the American Academy of Pediatrics, protesting this somewhat unethical behavior by the expanded Child Care Program.

Dr. Randall H. Silver, Ellsworth, reviewed the work of the Downeast Health Service and Family Care. Dr. Silver said that at present, there were approximately three programs handling child-care and over-lapping. Infants on the M.I.C. program which has been in operation approximately two years, and is well established, handles infants from 0-1 yr. of age; the Medicaid program will cover children from 1-21 and it is confined to children of Medicaid recipients. Expanded Care Plan would cover not only Medicaid recipients, but all others. Dr. Silver said that he would like to get a grant for a program that would cover all of Washington County, for both the Medicaid and the Expanded Care Program. He felt there should be an overall coordinator who would prevent fragmentations. The coordinator could be an employee of, and under the direction of, the Medical Society. Dr. Silver said he would like to set up and direct this program. Dr. A. Cowan Collins and Dr. Bryan Stone were asked to help write up this program. Once this new program is written up, it will be reviewed by Drs. MacBride and James C. Bates before being sent to the Medical Society for final approval.

There was considerable discussion of the Family Planning Program. Dr. MacBride brought up the fact a letter had been sent out encouraging his patients to go to the Family Planning Clinic for Pap Smears. He felt that he could do this very well in his own office. This was discussed, particularly with Dr. Silver. His feeling, as well as the feeling of the Society, was that the Family Planning Program was excellent if it was confined only to what it was set up to do. It was the feeling of the members of the Society, also, that the educational part of the program could be handled in clinics; Pap Smears could be done in the doctor's office, with less expense and probably larger numbers could be seen.

Dr. James C. Bates said that he would like to have the next meeting in Calais. It was thought we could hold the next meeting the last Monday in April.

KARL V. LARSON, M.D., *Secretary*

ANDROSCOGGIN

The monthly meeting of the Androscoggin County Medical Association was held at Steckino's Restaurant on March 21, 1974. The meeting was called to order by the President, Dr. Gerard L. Morin, at 8:00 p.m., with 35 members present.

Dr. Morin was pleased to introduce Dr. Paul A. Fichtner, President of the Maine Medical Association. Dr. and Mrs. Fichtner were able to make it through our last ice and snow storm of the year to be present at the President's annual visit to the Androscoggin County Medical Association.

The minutes of the February meeting were read and approved. The Secretary presented several items of correspondence. The membership was reminded that several members of our organization will receive commemorative pins at the 121st Annual Session of the Maine Medical Association on June 17, 1974: Dr. James A. Williams of Mechanic Falls, 60 years; Dr. Merrill S. F. Greene and Dr. Linwood A. Sweatt, 50 years.

The Maine Heart Association is sponsoring a Student Research Associates Program for the summer of 1974. Anyone wishing to sponsor a student was requested to contact the Secretary of the Association or the Maine Heart Association.

A letter from our psychiatric colleague, Dr. Venkat R. Sundaram, presenting several disquieting recent trends in Mental Health, was read to the membership. It is Dr. Sundaram's opinion that "All in all, the private practitioner, in the field of Mental Health, is being squeezed out of having any input into the services rendered in this area." As support of the charges, he appended two articles from the March 7, 1974 Portland Press Herald and Evening Express, dealing with release of a report prepared by the Mental Health Committee of the Maine Medical Association. After lengthy discussion, it was moved and seconded that this Association once again reaffirm its position that the Augusta Mental Health Institute must be responsible for the care of psychiatric patients which are beyond the abilities of Tri-County area medical care facilities. A statement of this reaffirmation was forwarded to the chairman, Board of Directors, Tri-County Mental Services, because of that organizations position of leadership.

Dr. Charles A. Hannigan reported on further investigations of obtaining legal counsel for the Androscoggin County Medical Association. Following discussion, the membership approved the concept, and the President directed Dr. Hannigan to prepare a formal presentation of the plan and estimate of the required funding.

Dr. Morin announced the reappointment of Dr. Russell A. Morissette as local advisor to Chapter VII of AAMA, State of Maine Society. The membership voted approval of financial support of that organization's educational program for the 9th annual convention in May 1974.

The Chairman of the Medical-legal committee was directed to obtain as clear a picture as possible of the medical-legal activity in this County. There is a great deal of heresay, but very little factual information.

The reference committee has prepared two resolutions for presentation to the Interim Meeting of the House of Delegates. These were approved by the Association and forwarded to the Maine Medical Association for presentation on April 6, 1974.

Mrs. Dorothy Morissette's name has been forwarded for consideration for the Huddilston award.

Dr. Paul A. Fichtner discussed the activities of the Maine Medical Association for the past year on the local, State and National levels. It was his expressed feeling that unless National attitudes change, the impending Federal Health Care System will eventually place the physicians in a closely structural technicians role rather than a position of leadership in health care delivery. His sentiments were resoundingly echoed by the membership.

There being no further business to conduct, the meeting was adjourned at 10:15 p.m.

RICHARD M. SWENGEL, M.D., *Secretary*



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Teratoma: A Model For Studying Cancer Biology

DONNA KIEVIT THOMPSON, M.D.*

Teratoma is defined as a tumor containing tissue derivatives of all three embryonic germ layers (ento-, ecto-, mesoderm). Expanding that definition to include tumors containing embryonal germ cells, the cell from which teratoma tissues are derived, the more complete definition of teratoma is that of a tumor containing derivatives of or the potential for forming tissues of all three germ layers. These tumors occur in man and other animals and may be congenital in origin or arise in later life. They are unique among tumors in that their cell of origin is a germ or stem cell and thus can develop into many tissue types. Teratomas are true neoplasms in that they grow at a rate independent from their host; they may behave in a benign or malignant manner. Important examples are the common benign ovarian dermoid tumor and the testicular embryonal cell carcinoma of man and mouse.

Teratomas have long been of interest to cancer biologists because of their germ cell origin. Because of this origin, the teratoma shows not only classical malignant growth patterns but also has the ability to differentiate into many tissues; i.e., teratomas exhibit morphogenesis as well as growth and carcinogenesis. The endpoint of teratoma differentiation may be a simple tissue mass or more complexly organized embryoid bodies. The final tissue types may be benign or malignant histologically. Such morphogenetic behavior of the malignant stem cell raises many questions important in understanding cancer behavior as well as the development of normal cells: What causes the stem cells to behave as neoplasms and why do some grow in an aggressively

malignant, anaplastic manner while others undergo morphogenesis from malignant precursors to benign-appearing mature tissues? By studying the behavior of teratomas, research workers hope to find answers to these questions and thus gain insight into the behavior of neoplastic cells in general.

Observations of the natural occurrence and behavior of teratomas reveal some interesting facts that may provide clues as to factors important in determining their behavior. Many of these observations are derived from study of the embryonal cell teratoma of strain 129 fetal mice (as will be seen subsequently, the most important research model of teratoma biology) as well as human teratoma.

First, for unexplained reasons, teratomas occur with statistically greater frequency in the right gonad in all species studied.

The composition of teratomas is varied and may be simple or complex. Only the undifferentiated malignant stem cells may be present as in the testicular embryonal cell carcinoma. Tissue of mixed germ cell origin may be present as either early derivatives (i.e., neural tube cells) or more mature adult tissue (i.e., bone). Organization may be absent or present in a rudimentary way (i.e., bone, cartilage and fibrous tissue juxtaposed). The most organized form of teratoma is that of the embryoid body. Here tissues are arranged in a blastula-like form with appropriate orientation of ento-, ecto- and mesoderm. A yolk sac may be present and occasionally mesenchymal derivatives such as erythroid cells may be seen. Often undifferentiated malignant-appearing cells may be present with mature benign-appearing tissues in teratomas. The degree of differentiation goes from the undifferentiated embryonal (stem cell) carcinoma through mixed

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teratocarcinoma to the well-differentiated teratoma containing only benign elements. Male and female cells may be found on chromosomal analysis of teratomas from either sex.

Genetic factors play a role in teratogenesis. Teratomas occur with unusual frequency in the inbred strain 129 mouse and with even more frequency in the recently further inbred strain 129/terSv.¹

Sex of host also appears important in influencing development patterns of teratomas. In the female, benign cystic dermoids are very common while malignant, solid tumors are rare. In the male, teratomas of any type are rare but those that are found are usually highly malignant. Several theories have been proposed to explain this difference. Female germ cells enter meiotic prophase in fetal life and remain at this stage for many years while male germ cells continue to undergo many mitotic divisions through life.² Another difference between male and female germ cells is that the female cell contains far more cytoplasm.³ Could this mean that female cells contain more "organizer" substance? Also to be considered as perhaps important in influencing tumor behavior is the different physical and chemical environment of the ovary and testis.

Different environment appears to play a role in other examples of teratoma behavior. First, these tumors (and other neoplasms) are more common in cryptorchid testes. In transplantation experiments in mice, teratoma tissue implanted in splenic tissue will not grow while tissue in muscle, peritoneal cavity and other areas thrives.

The importance of hormonal influence is illustrated by behavior of fowl teratomas.² Tumors may be induced readily in testes in the spring when spermatogonia are actively dividing, by zinc injection; during other seasons the induction requires addition of gonadotropin to be successful.

Maternal factors of unknown type may also influence teratoma development. In strain 129 mice, males of second litters have twice the incidence of teratoma as compared to first litter offspring.²

The implication of the observations discussed above is that many factors are involved in influencing the behavior of teratomas. This is consistent with data from the study of other tumor-types that show multifactorial influence on carcinogenesis.

Teratogenesis is the development of teratomas. Teratogenesis as the result of metamorphosis of undifferentiated cells was first proposed by Askanazy in 1907.⁴ The importance of this theory and its implications for the study of cancer behavior was unrecognized until the 1950's when L. C. Stevens⁵ and later other workers began conducting studies of mouse teratomas which proved the truth of the theory. Many fascinating experiments showed that undifferentiated malignant cells did indeed develop into differentiated teratomas.

Pierce and Dixon in 1959⁴ injected clumps of differentiated and undifferentiated strain 129 mouse teratocarcinoma into the peritoneal cavities of other mice. New ascitic tumors developed with the conformation of embryoid bodies: individual tumors consisted of an embryoid disc which gave rise to neural tube cells and subsequently squamous cells and neuroglia. Entoderm and yolk sac gave rise to mesenchyme. Some trophoblastic cells also evolved. These results were constant and reproducible and proved that differentiated cells arose from undifferentiated ones during teratogenesis. The important question as to what caused the cells to differentiate into such organized embryoid bodies (was there an "organizer"?) was raised but as yet is unanswered.

A second important study was done by Stevens in 1960.⁶ He grafted undifferentiated and endodermal cells from strain 129 mice teratoma embryoid bodies into the anterior chamber of the mouse eye. As with the ascitic tumors, these cell clumps grew and differentiated into many tissue types as well as forming daughter embryoid bodies.

The most conclusive proof that undifferentiated tumor cells can give rise to differentiated tissues came from the work of Kleinsmith and Pierce in 1964.⁷ Single undifferentiated dissociated cells of embryoid bodies from strain 129 mouse teratomas were transplanted into mouse peritoneal cavity. One thousand seven hundred grafts gave rise to 43 tumors containing up to 14 well-differentiated tissues as well as persistent embryonal carcinoma cells (undifferentiated cells). This work showed that malignant cells do not have an irreversible change towards wild, anaplastic growth: they are capable of changing into or giving rise to benign tissues. Again the question is raised, and remains unanswered, as to what causes both the malignant behavior and benign differentiation of these cells.

Human teratoma also exhibits the development of differentiated tissues from undifferentiated ones. Clinical reports illustrate this. Embryonal cell carcinoma and testicular teratoma may give rise to metastases more or less differentiated than the primary tumor. There are several case reports of proven malignant testicular teratoma and embryonal cell carcinoma giving rise to pulmonary metastases shown to contain a single benign tissue^{8,9} or several types of benign tissue in the form of "adult teratoma" nodules.¹⁰ There is even a case of another tumor-type tissue developing from a teratoma: a testicular teratocarcinoma eventually developed cells giving rise to a carcinoid okmor.¹¹ The British pathologist, Willis, reported a collection of cases in which teratoma tissue in the testis was histologically benign at the same time as malignant-appearing metastases were present.² Apparently the undifferentiated original cells of the tumor grew and differentiated in the testis while the metas-

tases showed growth but no differentiation. Human embryonal cell carcinoma and teratoma has also been shown to be of the same origin as mouse teratoma by light and electron microscopy comparisons of cell structure. Both the germ cells and their tissue derivatives are similar.¹²

What is the origin of the germ or stem cell of teratomas? What makes this cell behave in a neoplastic manner? Several theories have been proposed in answer to the first question; the second is still unanswered.

British workers have proposed and favored the concept of the germ cell as an embryonic totipotent cell that has somehow "escaped" from the influence of early organizer substances.^{2,13} These embryonic cells become separated and sequestered during the invagination of the primitive streak. The principal argument in favor of this theory is the lack of obvious organization of teratomas as might be expected if these cells were developing as true independent gonadal germ cells. Against this theory are many points: it does not explain the facts that teratomas most commonly arise in gonads, the differences in distribution by sex, lateral preference, and the induction of gonadal tumors in fowls and mice. Thus, this theory is today largely regarded as inadequate.

The presently accepted theory is that the stem cell of the teratoma is the gonadal germ cell, but controversy still remains as to whether the teratoma stem cell arises by a haploid or diploid route.^{2,3} The crux of the argument is the occurrence of XX tumor cells in the male: how do these cells arise? One faction argues that the XX pattern results from errors of mitosis i.e. by polyploidy or nondisjunction. This group favors the development of the teratoma stem cell by changes in a diploid cell as through the mitotic errors above. The alternate explanation is that haploid cells result from reduction division and these in turn undergo a parthenogenetic fusion followed by the malignant change. This latter haploid theory of development is the one more currently popular as it appears to be more consistently reproducible. Random mitotic error of diploid cells is not consistent enough to produce a predictable tumor pattern.

Currently, both the germ cell and the totipotent cell theories have a role in explaining the development of teratomas.³ The totipotent theory nicely explains the occurrence of extragonadal (i.e. coccygeal, mediastinal) tumors. The teratoma develops from cells sequestered in an unequal division at the blastula stage and goes on to grow as a sort of blighted conjoint twin. The germ cell theory accounts for the more common gonadal teratomas, probably on a parthenogenetic mechanism as discussed above.

Most of the studies of teratoma biology have dealt with the proof of teratogenesis by morpho-

genesis of the malignant gonadal germ cell (teratoma germ cell or cell of undifferentiated embryonal carcinoma), tracing the tumor's development from the collection of undifferentiated cells through complex patterns of multiple tissue-types. Most of this work has been done in the strain 129 mouse tumor and much of it has been done by L. C. Stevens (Jackson Lab, Bar Harbor).^{5,6,14,1} Now that the morphogenesis has been well-studied, the workers are turning their attention more to studying the causes and influences of this morphogenesis and the causes of initial malignant change in the germ cell.

The very first step in teratogenesis is malignant change of the germ cell: the benign gonadal germ cell becomes the malignant undifferentiated embryonal carcinoma cell which may then go on with teratogenetic morphogenesis. In the strain 129 mouse, the germ cells undergo this neoplastic change at day 12.5 of gestation and at no other time of fetal development.¹⁴ It is as yet unknown what happens to cause this malignant change. From this point, the changed cells proliferate as malignant multipotent embryonal cells and eventually rupture the seminiferous tubule and metastasize. At the same time, they undergo morphogenesis as described previously. It is known that genetic, hormonal and physical factors play a role in this entire process but how their influence is exerted is unknown.

The study of teratoma biology has many implications for the understanding of cancer biology in general. Most important is the knowledge gained about the behavior of malignant cells and in particular the nature of the malignant change in relation to cell behavior. Neoplastic cells are not necessarily irreversibly altered when undergoing malignant change and they are not irreversibly destined to wild, anaplastic, invasive, aggressive behavior. As proven by behavior of teratomas, neoplastic cells do maintain the capacity for differentiation and morphogenesis and can alter their behavior from malignant to benign patterns. This implies that mutation or other alteration of specific structural genes is not a prerequisite for malignant change.

The retention of various expressive potentials by teratoma cells is explained best by the Jacob-Monod genetic model of repression and induction through factors affecting regulator genes. All the cells of an organism or a neoplasm contain the full gene complement of that organism, yet not every cell carries out every function. This difference in cell activity is a function of what genes are being expressed under the influence of various inducer and repressor substances which influence gene activity. Thus, the type of behavior exhibited by neoplastic cells, like that of normal cells, may be a function of the interaction of inducer and repressor substances on the full gene complement allowing for manifest activity of only a few genes.

Support for depression of gene function in neoplastic cells is seen in several cancer models. The protein alpha-fetoglobulin is normally produced only by fetal cells, but some teratomas and hepatomas of mature animals also can produce this protein.¹⁵ There are also numerous reports of bronchogenic carcinomas of the lung producing substances (often hormonal) normally not produced by bronchial tissue. Likewise the patterns of morphogenesis of teratomas may result from a change in gene expression under the influence of yet unknown factors.

Knowledge gained from teratoma studies has therapeutic implications as well. If we could determine the factors that allow malignant teratomas to differentiate into benign tissues, perhaps we could learn to manipulate those factors to direct malignant neoplastic tissues into patterns of benign change: to manipulate the expression of selected parts of the genome. This could have distinct advantage over the present attempts to kill malignant cells as the goal of cancer therapy. The therapeutic modalities presently used have significant harmful effects on normal cells and in some tumor types the therapeutic-toxic margin is very small. Thus, a search for the factors controlling (and possible means of therapeutic intervention in this process of control) the expression of the malignant cell's genome is an important research goal. Further investigation of the morphogenetic behavior of teratomas may play an important role in delineating such control factors and thus contribute

significantly to our growing knowledge of cancer biology.

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Fall Meeting of the M.M.A. House of Delegates

Saturday, December 14, 1974

Eastern Maine Medical Center, Bangor, Maine

12:30 P.M. — Registration; 1:00 P.M. — Lunch; 2:00 P.M. — Meeting

10:00 A.M. — Meeting of the Executive Committee

The Current Approach to Hemophilia

CARL JAMES MORRISON, M.D.*

May 29, 1974 was Hemophilia Day at the Maine Medical Center. Thirty hemophiliacs and their families met in the clinic areas with members of the departments of medicine, orthopedics, pediatrics and dentistry, as well as nurses, a geneticist, physical therapists, social workers, insurance representatives and representatives of drug companies. In addition to the expert counsel of Dr. Peter Levine, the guest hematologist for the day, the patients were given an opportunity to review their individual medical, dental, social or financial problems. Simultaneously, throughout the hospital, clinical and laboratory teaching sessions were being held for interested personnel.

Although hemophilia has been recognized for centuries, it is only recently that the cause and treatment of the disorder has been understood enough for practical clinical application. Portland, with Hemophilia Day, has become one of the few cities in the world to offer a comprehensive approach to the disease. Only within recent years has hemophilia been defined as a functional lack of a specific clotting factor; and even more recently has the differentiation between Classical Hemophilia and Christmas Disease been made.

Aside from the crucial difference in the products which may be used for specific factor replacement, there is little to differentiate between these diseases. For simplicity, the word "hemophilia," as used here, applies to each of them. Both are sex-linked and recessive. Both are characterized by a normal bleeding time with a tendency to rebleed some hours after the initial insult. This delayed rebleeding is a key factor in the approach to the hemophiliac.

Without doubt, the one concept which has done most toward preventing the long range consequences of hemophilia is that of early treatment. Patients who are treated at the onset of bleeding require much less factor replacement. Frequently, a single large infusion of that factor maintains permanent hemostasis. The greater the delay in onset of treatment, the more prolonged it eventually becomes and hazards of injury to a joint are increased.

Carrying the idea of early replacement therapy further, many would now agree that the optimal time to initiate treatment is as soon as possible after any injury in which bleeding or delayed rebleeding is a potential threat. Again, at that point in the evolution of the injury, a large initial replacement dose of specific factor may be all that is ever needed for

therapy. Contrast that to delayed replacement or to no replacement. The patient may spend days or weeks with rest, elevation and ice, resulting in loss of time from work or school as well as a joint which has a limited degree of function with an increased tendency toward reinjury and rebleeding.

In some areas, in an effort to expedite prompt treatment of injury, programs of home infusion have begun. These programs, in which the patient or his family keep all necessary materials at home for self-infusion, have proved their worth many times, both financially and medically.

Attendant to the early approach to hemophilia, however, are problems, education being one of the foremost. The medical community needs some awareness of the simplicity with which the major problems of hemophilia can be prevented by early, liberal factor replacement. Patients need to realize that there is prompt treatment available for their injuries which will obviate many of the difficulties to which they are accustomed. Much patient noncompliance with early treatment is a reflection of past frustrations with a medical system which had little to offer in terms of treatment until a severe problem had arisen.

Along with education, finance ranks as a nagging problem. A unit of plasma or cryoprecipitate may cost over \$25. Commercial concentrates, containing up to 800 units/30 cc, are available which make infusion very simple; unfortunately, these can cost up to \$100 for a single ounce. It has been repeatedly demonstrated, however, that delay in the use of these products frequently leads to an ultimately greater expense. As stated, early treatment leads to minimization of time lost from work and school, and long-term orthopedic problems are avoided. In addition to the monetary saving, therefore, one finds a patient who is free from the complications of his disease and who is able to function with near normalcy from a medical, social and psychological standpoint.

The problem of hepatitis is very real and is present with any of the blood derivatives used in treatment. The hazards of hepatitis, however, seem to be far outweighed by the hazards of hemophilia itself. In the older patient with little past exposure to blood, there is real danger. Children, however, appear to have a much better tolerance for the disease. For this reason, it has been suggested that repeated challenge in childhood might prevent the more severe form of the disease in later life.

The specifics of treatment of hemophilia are rather simple. Details for the management of

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specific bleeding problems may be found in "Diagnosis and Treatment of Hemophilia," by Dr. Herbert S. Strauss.¹

As of now, there is no cure for hemophilia. Treatment, however, is certainly available. Most of the current problems are social and administrative and consist in bringing together the patient, doctor, and all others who are concerned with providing hemophiliacs with the benefits of new knowledge

and new materials.

And that's what happened at the Maine Medical Center, May 29, 1974.

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Six Year Experience With Acute Appendicitis at MMC: 1967-1973

JAMES H. STUART, M.D.*

During the 80 years since McBurney¹ described his point of incision for operative intervention, appendicitis has become a much less serious problem than it was in his time. However, it continues to have significant morbidity and mortality.² To determine whether our institutional mortality and morbidity could be reduced, we reviewed our experience with appendicitis from January 1967 through October 1973.

The study series of 675 operated patients included 490 cases of acute appendicitis without perforation and 185 cases of acute appendicitis with rupture and peritonitis. Included in the 675 cases for the review were 82 recent cases seen during the first 10 months of 1973 whose records permitted detailed analysis.

The age distribution is summarized in Table 1 which also indicates that the cases complicated by perforation and peritonitis were predominantly in the very young and older age groups. Of the 490 cases with acute appendicitis without perforation, two-thirds were in the age range from 10 to 30 years whereas one-third of the patients with rupture were in this same group.

There was a remarkable difference in the mortality and morbidity in cases with perforation compared to those without perforation. The average length of stay for patients with acute appendicitis without perforation was six days compared with 12.6 days for those patients with perforation. The complication rate in patients without perforation was 6% and in those patients with perforation it was 29%. Of 490 cases without perforation, there was no mortality. Of 185 cases with perforation and peritonitis, there was a mortality of 3.4%. The overall mortality for the entire group was 0.8% (6 cases).

The development of perforation and its as-

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TABLE 1

AGE DISTRIBUTION OF THE 675 CASES OF ACUTE APPENDICITIS SEEN AT MMC 1967-1973		
Range	Without Perforation	With Perforation
0-9	16%	23%
10-19	46%	27%
20-29	17%	11%
30-39	8%	7%
40-49	6%	6%
50-59	3%	11%
60-69	3%	10%
70 +	1%	5%
Total	490 cases	185 cases

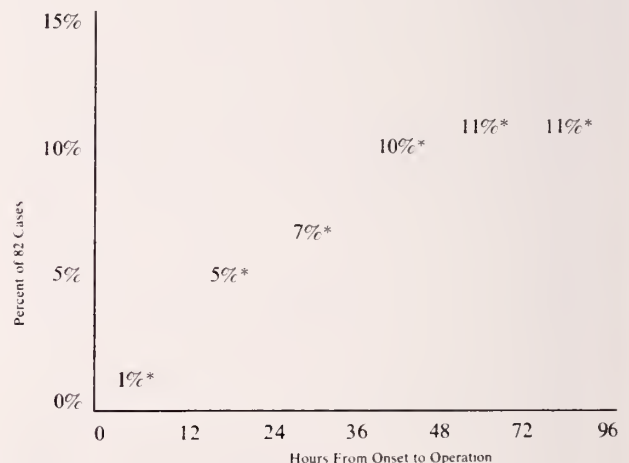


Figure 1. Complication rate and duration of illness in 82 patients seen in the first ten months of 1973.

sociated increase in morbidity appeared to be a function of the time from onset of illness to perforation (Figure 1). One-third of the 82 cases seen during the first 10 months of 1973 and who developed either

TABLE 2

COMPLICATIONS SEEN IN 675 CASES 1967-1973		
	Without Perforation	With Perforation
Wound Infection	4%	15%
Wound Disruption	1%	3%
Post-op Fistula	0%	2%
Abcess	0%	1%
Others	2%	9%
Total Cases	490	185

TABLE 3

WOUND MANAGEMENT IN 82 CASES SEEN IN 1973		
	No.	Wound Complications
<i>Without Perforation</i>		
1° Closure w Drain	4	2
1° Closure w/o Drain	45	3
2° Closure	4	0
<i>With Perforation</i>		
1° Closure w Drain	12	3
1° Closure w/o Drain	4	1
2° Closure	13	3

a perforation or other complications were not operated upon until more than 36 hours after the onset of illness. These 82 cases were examined closely to determine if any delay in operation was avoidable and if complications could have been reduced. Sixteen cases had a delay in surgery of more than six hours after admission to the hospital. In seven of these the delay resulted in operation more than 24 hours after the onset of symptoms. Five of the seven patients developed complications. The importance of early operation was also evident after reviewing the 64 patients in the entire group of 675 cases who had wound complications. Fifty-four had a history of symptoms more than 24-hours prior to surgery.

The complications of appendicitis for the total series are summarized in Table 2 which shows that the patients with perforation had a much higher morbidity rate than those patients without perforations. Because wound problems accounted for the majority of complications, wound management in the 82 patients seen during 10 months of 1973 was studied (Table 3). Among the 53 cases without perforation who had five wound complications, two had closure with a drain and three had closure without drainage. Forty-five of the 53 cases were closed without drainage and had no wound complications. Among the 29 cases with perforation, there were

seven wound complications. There were three complications in the 12 patients with closure and drainage, three complications in the 13 patients with secondary closure, and one complication in four patients who had primary closure without drainage. In spite of drainage and delayed closure, there was a significant incidence of wound complications in the perforated group. The results of intraoperative cultures of peritonitis fluid and antibiotic use were also studied in the 82 cases seen in 1973. There were 27 cultures taken in 53 patients without perforation; nine were positive. Five of these nine patients developed postoperative wound complications and only one received appropriate antibiotic therapy. There were 24 cultures performed in the 29 patients with perforation and 22 of those were positive. Wound complications developed in seven of the 22 cases with positive cultures. Only four of the seven patients with wound complications received appropriate antibiotic therapy on the basis of culture sensitivity reports. The use of an intraoperative bacteriological smear could be of some help in deciding which wounds to drain or close secondarily and thereby reduce the morbidity of appendicitis. It might also give some indication as to which antibiotic, if any, should be used.

SUMMARY

Nearly seven years experience with appendicitis treated surgically at the Maine Medical Center has been reviewed. The overall mortality in the 675 cases has been 0.8% and confined to patients with perforation and peritonitis. Major factors contributing to mortality were operations delayed more than hours after onset of symptoms and a higher incidence of perforation, especially in the very young and older patients. Wound complications were predominantly related to the existence of perforation and could possibly be reduced by draining or delaying closure of cases with positive intraoperative bacteriologic smears. Intraoperative administration of appropriate antibiotics might help to reduce the wound complication rate especially in the patients with positive intraoperative smears.

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Colostomy Closure — A Simple Procedure?

OMER A. THIBODEAU, M.D.*

INTRODUCTION

The use of a temporary colostomy in the management of colon carcinoma, diverticulitis, and other diseases of the colon has been in vogue for some time. Various aspects concerning the surgical management of the temporary colostomy have been well elucidated in the literature, but the topic of colostomy closure has not been adequately reviewed. Goligher¹ reports that the operation for colostomy closure has a notorious reputation for fecal fistula. Other recent studies^{2,3} have pointed to the relatively low incidence of complications following colostomy closure. Knox, Birkett, and Collins⁴ reviewed 179 patients in whom colostomy closure was performed with a 2.2% mortality, 23% fecal fistula, and 10% wound infection. Thomsen and Hawley⁵ demonstrated conflicting results in a series of 139 patients undergoing closure of transverse loop colostomies with no deaths, 2.9% fecal fistula, and 14% wound infection.

The purpose of this study is to review the recent series of colostomy closures at the Maine Medical Center in regard to the mortality and morbidity of the operation and to define the factors which may be causative in the development of these complications.

METHODS — MATERIALS

A total of 83 colostomy closures were carried out in 81 patients between January 1969 and December 1973; two patients required multiple procedures. There were 37 male patients and 44 female patients ranging in age from less than a year to 90 years with a mean age of 65 years. Seventy-eight of the primary colostomies were performed at the Maine Medical Center and five were performed at other hospitals. The time between colostomy performance and closure is summarized in Table 1. The indications for colostomy are listed in Table 2. The types of stomas constructed are listed in Table 3. The indications for colostomy closure included a healed suture line and an unobstructed distal colon evidenced by barium contrast study. All patients had mechanical preparation of proximal and distal limbs and restriction of solid food prior to colostomy closure. Nineteen patients received in addition antibiotic bowel preparation. Excision of the stoma and end-to-end anastomosis with two-layer closure was used in 46 instances and simple linear closure of the stoma by two-layer suture in 37 instances. A superficial

TABLE 1

TIME LAPSE BETWEEN COLOSTOMY CONSTRUCTION AND CLOSURE	
<i>Time in Weeks</i>	<i>No. of Patients</i>
0-5	8
6-10	22
11-15	12
16-20	10
21-25	6
26-30	9
31-35	3
36-40	3
41-45	2
46-50	1
50+	7

TABLE 2

INDICATIONS FOR COLOSTOMY	
<i>Underlying Pathology</i>	<i>No. of Patients</i>
Diverticular Disease	
Perforated Disease	28
Obstructed	5
Gangrenous cecal diverticulum	1
Colon Carcinoma	
Obstructed	14
Anterior resection, low anastomosis	6
Perforated	3
Trauma	
Blunt	6
Penetrating, high velocity	4
Severe perineal lacerations	1
Anastomotic leak or fistula	4
Imperforate Anus	3
Recurrent Sigmoid Volvulus	2
Sigmoid Anastomotic Stenosis and Obstruction	1
Sigmoid Stenosis Post Irradiation	1
Metastatic Vaginal Carcinoma	
with Obstruction	1
Sigmoid Perforation from Embolus	1
Nonspecific Granuloma of Rectum	1
Sigmoid Perforation from Foreign Body	1

wound drain was employed in 44 instances and loose skin approximation without drain was used in 28 instances. In eleven cases open packing of the wound and secondary closure was employed.

RESULTS

There was an uneventful postoperative course with normal defecation within three to nine days after closure in 63 cases (75%). The average postoperative length of stay was eleven days. Twenty cases (25%) had complications leading to an increased average length of stay of 14 days. Wound complications accounted for ten (12%) of the complications; eight of these were clinically significant infections. Problems related to the colonic suture

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line resulting in fistula, disruption, or stricture occurred in six cases (7%). In four cases (5%) miscellaneous complications related to the abdomen contributed to longer length of stay. There was one death (1.2%) related to disruption of the anastomosis and peritonitis. Table 4 summarizes the types of complications.

The incidence of postoperative complications was not significantly different between age groups or between sexes. Summarized in Tables 5 and 6 is the incidence of complications related to underlying pathology, age of the stoma, and type of closure. Significantly, all six complications of the colonic

suture line occurred in patients with diverticular disease although the lapsed time between colostomy and closure averaged 32 weeks and was longer than for other patients. Four end-to-end anastomoses developed complications while two linear closures developed complications. The single instance of stricture occurred following continuous suture closure of an end-to-end anastomosis.

The occurrence of postoperative wound infection was unrelated to stoma age, underlying pathology, method of closure of the stoma, or method of wound closure (Table 6). There was a significant difference between the incidence of wound infection in those who received antibiotic bowel preparation and those who did not. Only one of 19 such patients developed a significant wound infection (5.2%) compared with seven infections in the 64 patients (10.9%) who did not have antibiotic preparation.

TABLE 3

TYPES OF STOMA	
Colonic level	No. of Patients
Cecostomy	
Cutaneous	2
Right Transverse	
Loop	43
Turnbull*	13
Tube	1
Mid Transverse	
Loop	2
Turnbull*	1
Left Transverse	
End	3
Double-barreled	1
Sigmoid	
End	11
Double-barreled	4
Loop	2

*Primary bowel wall to skin suture

TABLE 4

COMPLICATIONS	
Type	No. of Patients
COLON SUTURE LINE	
Fecal fistula	4
Suture line disruption, peritonitis, death	1
Anastomotic stricture	1
WOUND	
Wound infection	8
Incisional hernia	1
Hemorrhage into wound	1
OTHER	
Small bowel obstruction	2
Prolonged ileus	1
Fecal impaction	1

TABLE 5

COLON SUTURE LINE COMPLICATIONS				
Type	Underlying Pathology	Time between Construction and Closure in Weeks	Closure	Suture
1. Fistula	Diverticulitis	37	End-to-end Anastomosis	2-layer interrupted
2. Fistula	Diverticulitis	28	Linear closure	2-layer interrupted
3. Fistula	Diverticulitis	8	Linear closure	2-layer interrupted
4. Fistula	Diverticulitis	32	End-to-end Anastomosis	2-layer interrupted
5. Disruption	Diverticulitis	75	End-to-end Anastomosis	2-layer interrupted
6. Stricture	Diverticulitis	11	End-to-end Anastomosis	2-layer continuous and interrupted

TABLE 6

WOUND INFECTIONS				
Culture	Underlying Pathology	Time between Construction and Closure in Weeks	Closure	Antibiotic Preparation
1. None	Penetrating injury	13	Drained	No
2. E. Coli	Nonspecific rectal granuloma	158	Undrained	No
3. None	Carcinoma	4	Undrained	No
4. E. Coli	Diverticulitis	8	Drained	No
5. None	Penetrating injury	9	Packed open	No
6. E. Coli	Carcinoma	6	Drained	No
7. Pseudomonas, E. Coli	Diverticulitis	18	Undrained	No
8. None	Sigmoid stricture	24	Drained	Yes

DISCUSSION

The results of this study indicated a wound infection rate of 9.6% which is comparable to other reported series.^{4,5} The mortality of 1.2% and morbidity of fistula of 4.8% are lower than those reported by Knox, *et al*⁴ but higher than those reported by Thomsen and Hawley.⁵ The overall complication rate of 25% is comparable to that of other clinics in recent years and represents a steady decrease over the years attributable to more careful technic, antibiotics, and better patient preparation. This relatively high incidence of complications has favored the advocacy of primary colonic resection and anastomosis without diverting colostomy first by McSherry⁷ and later by Madden⁸ and Bacon.⁹

The conclusion by Knox⁴ that increased time between colostomy and closure is associated with fewer complications is not supported by the findings of this study. The latter does support Knox's observation that diverticular disease predisposes to a higher incidence of complications, especially fecal fistula. The reason for this remains obscure. Weinstein¹⁰ has emphasized the importance of demonstrating the readiness of the colon to accept restoration of continuity and has advocated a water-flow test in preference to barium studies.

The lower incidence of wound infection in patients who received antibiotic preparation conflicts with the findings of Everett *et al*¹¹ but is supportive of the findings of Rosenberg *et al*.¹² The factors of stoma age, underlying disease, type of closure, and bowel preparation are probably secondary to meticulous technic, avoidance of suture line hematomas, closure of diseased bowel, and an ischemic suture line in the development of complications following colostomy closure.

SUMMARY

The results of 83 colostomy closures in 81 patients at the Maine Medical Center between 1969 and 1973

were reviewed. There was one death associated with closure disruption and peritonitis in a debilitated patient and an overall complication rate of 25%. The incidence of colonic suture line complications was 7% and confined to patients whose colostomies were originally performed for diverticular disease. The incidence of wound complications was 12% and did not appear to be associated with the nature of underlying disease, stoma age, type of stoma, or methods of closure. A lower incidence of wound infection was observed in patients having preoperative antibiotic bowel preparation than in those who did not. Frequently regarded as a minor surgical procedure, colostomy closure continues to have a significant postoperative morbidity.

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1974 Asthma Symposium

Sponsored by: Maine Thoracic Society

When: Wednesday, October 2, 1974
10 a.m. to 3 p.m.

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Neural, Hormonal and Immunological
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Acute and Chronic Asthma
Differential Diagnosis of Asthma,
Chronic Bronchitis and Emphysema
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The Whole Blood Recalcification Clotting Time

A Suggested Simple and Reliable Method for Monitoring Heparin Therapy

JOSEPH P. FANNING, M.D. and ANN M. DUBEAU, MT (ASCP)*

Heparin is a potent, direct anticoagulant which affects the coagulation mechanism at several points but which acts principally to inhibit or limit the actions of thrombin.^{1,6} When used clinically in the treatment or prevention of thrombo-embolism, its anticoagulant effect requires monitoring. Traditionally this has been accomplished by use of the Lee & White whole blood clotting time or one of its numerous modifications all of which, however, have acknowledged major disadvantages of lack of reproducibility and limited sensitivity.^{2,3,6} As a result, many substitute techniques have been developed, including plasma recalcification times, non-activated and activated partial thromboplastin times, activated whole blood clotting and recalcification times, modified thrombin times and blood heparin assays.^{4,6} One of these techniques, the activated partial thromboplastin time (APTT),^{2,6} currently enjoys widespread acceptance but, while satisfactory for screening for deficiencies of coagulation factors, has been reported to have limited sensitivity to heparin effect.^{4,5} While recommending use of the APTT in our laboratory, we were introduced to† and studied the whole blood recalcification clotting time as an alternative to the still frequently requested Lee & White whole blood clotting time, and as a possible alternative to the APTT, in monitoring heparin therapy.

WHOLE BLOOD RECALCIFICATION CLOTTING TIME METHOD AND RESULTS

1. 4.5 ml. of blood are drawn into a tube containing 0.5 ml. 3.8% sodium citrate and mixed gently. The tube containing the citrated blood is then placed on ice, brought to the laboratory and the test performed within one-half hour.
2. 0.1 ml. of the well mixed blood is pipetted into a 12 x 75 mm. glass tube. The tube containing the blood is then incubated for 2 minutes in a 25°C water bath.‡
3. 0.1 ml. of 0.02 M CaCl_2 is blown into the tube and a stopwatch is simultaneously started.

4. A nichrome wire hook is passed through the blood every 30 seconds. The end point of the test is the first fibrin thread picked up by the hook. Duplicate determinations are performed and should check within ½ minute. The time for the appearance of the first fibrin thread is recorded to the nearest ½ minute.

The test was performed on 30 normal laboratory personnel and a normal range of 1.5 to 3.5 minutes, for our laboratory, was established.

The test was run in parallel with the APTT on 40 patients on heparin therapy and a good linear correlation (correlation coefficient = 0.83) was obtained.

It was determined that a time of 7 to 10 minutes was the optimum range to maintain in patients on intravenous heparin therapy.

DISCUSSION

There can be considerable individual variation in patient response to heparin dosage and effect giving rise to the need for monitoring, particularly in those patients on intermittent intravenous heparin therapy. As blood heparin levels cannot be satisfactorily quantitated, resort to one of the above listed methods has to be made for monitoring of heparin-induced hypocoagulability. The Lee & White whole blood clotting time, while long established and seemingly simple to perform, has major disadvantages which make it unreliable both for heparin therapy monitoring and coagulation factor deficiency screening. It is, in effect, a cumbersome, time-consuming bedside procedure, difficult to standardize and inherently insensitive. The activated partial thromboplastin time (APTT) can be performed in the laboratory under much stricter control and is, accordingly, much more reproducible and rapid. Its sensitivity to heparin, however, reportedly is limited to the "mid-range" of heparin effect.⁴ Activator present in the test reagent tends to overcome the inhibitory effect of heparin⁵ and milder degrees of hypocoagulability result essentially in non-detection. At high levels of heparin effect, on the other hand, the activated partial thromboplastin time, like the Lee & White clotting time is frequently characterized by failure to reach an end-point. The activated partial thromboplastin time

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†Blood Coagulation and Hemostasis Workshop, ASCP Educational Center Program, April 2-5, 1973.

‡Temperor Thermostatic Water Bath. Techne Inc., Princeton, New Jersey 08540.

Guidelines For Administering Heparin

CHARLES F. THURBER, M.D.*

INTRODUCTION

In conjunction with the Division of Hematology of the Maine Medical Center, the author has assembled some ideas from his research to provide the clinician with some practical guidelines for the administration of heparin. It must be conceded at the outset that much of tradition as well as recent literature weighs heavy on anecdote and light on hard data for this topic. Nevertheless, certain trends are evident and will be developed in this paper.

It is assumed that the reader will have made a decision to heparinize. That is, it is not the intent of this discussion to weigh the relative merits of heparinization itself in given situations, i.e., after myocardial infarct, hip surgery, etc. The questions then to be addressed are: how much heparin to give; what route of administration is best; what dose schedule is to be used. As will be seen, answers to these questions are highly variable, and individualization of cases is a necessity.

Related to these basic concerns are the problems of risk factors for hemorrhagic complications, variability in sensitivity over time in a given case, and laboratory control of anticoagulation.

There are three broad indications for heparinization: prophylaxis against venous thromboembolic disease; treatment of deep vein thrombosis with or without remote pulmonary embolization; acute pulmonary emboli.^{1,2,3} In general, the degree of heparin effect desired increases with each of these respective conditions, and this should be remembered when selecting the best method of administration in an individual case.

METHODS OF ADMINISTRATION

In theory, continuous intravenous administration can provide the most constant predictable level of anticoagulation. Doses vary, but in general 20,000 to 40,000 units per 24 hours, given at a constant rate of infusion after a 5,000 U loading bolus is a reasonable place to start. Laboratory monitoring must at first be done every two to four hours until a stable level of anticoagulation vis-a-vis rate of infusion is achieved, once a day coagulation studies may then be satisfactory. An infusion pump is a useful safeguard of administration rate, but a large bore needle in the antecubital vein with reasonably close nursing surveillance may be a satisfactory alternative. Aside from the extra care required in giving the drug, patient immobilization seems to be a practical disadvantage of this method.

Intermittent boluses require less attention to the IV itself, but more vigilance toward coagulation levels.⁴ As the exponential rate of drug clearance vary with the dose, frequent small doses represent less time that coagulation times are at infinity.^{1,6} For example, 6,500 U given every four hours results in less total time per 24 hours that coagulation time is at infinity than does 10,000 U given every six hours. In either case, the total amount of heparin per 24 hours would be about the same. Consequently, by the former schedule, risks of hemorrhage would be lessened, but not eliminated (*vide infra*). In any case, coagulation studies must be done often, as close as possible to each subsequent dose. Patient mobility is less restricted then with continuous IV administration, and with a heparin lock there may be no restriction on ambulation.⁵

Intermittent subcutaneous heparin administration, because of potentially variable absorption and difficulty in drug reversal with protamine, is probably best reserved for cases where lesser degrees of anticoagulation are acceptable, i.e., prophylaxis. Patient ambulation is no problem and indeed outpatient self-administration is possible in long-term use. Doses around 5,000 U every eight to twelve hours would be reasonable to start. Initially, coagulation studies should be done at variable times between doses at least to ascertain that one is not overshooting. Later, sporadic lab tests may be obtained just prior to a subsequent dose to be sure anticoagulation is adequate.

VARIABLES

Many conditions exist which may cause the clinician to modify the vigor with which he pursues anticoagulation with heparin as well as the dose schedule in a given patient as the disease progresses. Specifically, hemorrhage risk factors and individual patient sensitivity must be taken into account.

Hemorrhage is an ever present problem with heparin administration. As mentioned, proportion of time with coagulation time at infinity predisposes to bleeding disorders. Nevertheless, these problems can occur at optimal or even suboptimal anticoagulation levels, all other factors appearing equal.^{7,8} Other conditions that may augment the effect of the drug itself and/or supplement bleeding tendency with the drug include: advanced age, female sex, shock, hepatic or renal disease, blood dyscrasias, aspirin, trauma, surgery, occult lesions (ulcers, aneurysms, etc.), possibly hypertension.^{1,4,9,10} Especially in the elderly under stress occult adrenal hemorrhage is a real risk with

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heparin.^{11,12} In the acute phase of any disease for a given level of anticoagulation more heparin may be needed than later when the condition has stabilized.⁴ Overlooking this fact and not down-scaling a dose, if indicated by coagulation studies, may lead to hemorrhagic complications.

In addition to inherent differences in patient sensitivity to heparin, other drugs may counteract heparin effects. Notably, these include digitalis, anti-histamines, tetracycline, and nicotine.^{1,13} Obesity also may increase drug dosage for optimal anticoagulation.

MONITORING

As mentioned, the degree of anticoagulation indicated depends on the clinical situation. In treating *acute* pulmonary embolization the antibronchospastic, antiserotonin effects of heparin supplant the anticoagulation effects and considerably high doses are indicated, i.e., 10,000+ U Q20H^{5,4} for at least 24 hours. During this time, coagulation studies are continuously at infinity and probably need not be measured.

At the other end of the spectrum, in many cases of long-term prophylaxis less than optimal anticoagulation may be acceptable. Infrequent coagulation studies to rule out overanticoagulation may be all that is necessary.

Between these extremes most heparin is given to treat thromboembolic disease in the absence of acute (i.e., recent, 24 hours) pulmonary emboli. In these cases optimal anticoagulation, with theoretically minimal hemorrhagic rise, entails coagulation studies two to two and one-half times control levels, maintained either constantly, as with continuous IV heparin, or less than one hour before each subse-

quent dose when heparin is given intermittently.

Finally, useful adjuvants in monitoring anticoagulation are periodic measurements of hematocrit and of stool and urine for occult blood. The latter would be particularly useful for the outpatient on long form therapy to perform himself.

SUMMARY

1. The techniques of continuous intravenous and of intermittent intravenous and subcutaneous heparin administration have been discussed. Technical advantages and disadvantages of each method have been mentioned.

2. Risk factors and causes of variability in response to heparin have been pointed out as important in modifying the overall methods of administration.

3. The relative importance of close versus less frequent laboratory monitoring of anticoagulation under various indications for heparinization has been discussed.

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also, like the plasma recalcification time and thrombin time, is usually performed on platelet-poor plasma, requiring centrifugation of the specimen and contributing to a lengthening of the time required to perform the test. Platelets exercise an inhibitory effect on heparin through platelet factor 4 and the level of the platelet count affects heparin activity in vivo.⁵ This platelet effect is not reflected in tests performed on platelet-poor plasma, while it is allowed for in methods using whole blood. The whole blood recalcification time⁵ is a whole blood test requiring no special reagent and utilizing no activator. It is performed in the laboratory under careful control. Its only major disadvantage is the requirement for a special 25°C water bath for its proper performance. There should be an awareness that it will be affected by abnormally high or low platelet counts and probably, also, by extremes in hematocrit values. As adapted by us in our labora-

tory it is considered to be a simple, sensitive and reliable test for monitoring heparin-induced hypo-coagulability of blood and is suggested and recommended for this purpose.

SUMMARY

Some commonly used laboratory methods for monitoring heparin therapy are listed and briefly discussed. One method, the whole blood recalcification clotting time is described and suggested as a simple, rapid sensitive and reliable method for monitoring heparin therapy.

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*Innes, I.R., and Nickerson, M., in Goodman, L.S., and Gilman, A. (editors): The Pharmacological Basis of Therapeutics, ed. 4, New York, The Macmillan Company, 1970, p. 537.

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The Role of the Detail Man

"I may be prejudiced, but I am very much in favor of the detail men I meet. Most of them are knowledgeable about the drugs they promote and can be a great help in acquainting me with new medication."

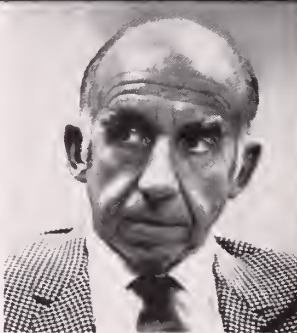
Family Physician's Perception

I think that most general practitioners in this area feel as I do about the detail man. Over the years I have gotten to know most of the men who visit me regularly and they in turn have become aware of my particular interests and the nature of my practice. They, therefore, limit their discussion as much as possible to the areas of interest to me. Since I usually see the same representative again in future visits, it is in his best interest to supply me with the most honest, factual, as well as up-to-date information about his products.



Dr. Willard Gobbell
Family Physician
Encino, California

Dr. Jeremiah Stamler
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Professor of Cardiology
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Medical School



"In the total picture of dealing with health problems in this country, there is a potential for detail men to play a meaningful role."

The Positive Influence

My contact with representatives and salesmen of the pharmaceutical industry is the type of contact that people in a medical center, research people, and academic people have and that's in all likelihood on a somewhat different level from that of the practicing physician.

Let me touch on how I personally perceive the role of the sales representative. These men reach large numbers of health professionals. Thus they could be — and at times actually are — disseminators of useful information. They could consistently serve a real educational function in their ability to discuss their products.

At present they do distribute printed material, brochures and pamphlets — some of it scientifically sound and therefore truly useful — as well as some excellent films produced by the pharmaceutical industry. When they function in this

Opinion
&
Dialogue

Is He a Source of Information?

Yes, with certain reservations. The average sales representative has a great fund of information about the drug products he is responsible for. He is usually able to answer most questions fully and intelligently. He can also supply reprints of articles that contain a great deal of information. Here, too, I exercise some caution. I usually accept most of the statements and opinions that I find in the papers and studies which come from the larger teaching facilities. It goes without saying that a physician should also rely on other sources for his information on pharmacology.

Training of Sales Representatives

Ideally, a candidate for the position as a sales representative of a pharmaceutical company should be a graduate pharmacist who has a questioning mind. I don't think this is possible in every case, and so it becomes the responsibility

of the pharmaceutical company to train these individuals comprehensively. It is of very great importance that the detail man's knowledge of the product he represents be constantly reviewed as well as updated. This phase of the sales representative's education should be a major responsibility of the medical department of the pharmaceutical company.

I am certain that most of these companies take special care to give their detail men a great deal of information about the products they produce—information about indications, contraindications, side effects and precautions. Yet, although most of the detail men are well informed, some, unfortunately, are not. It might be helpful if sales representatives were reassessed every few years to determine whether or not they are able to fulfill their important function. Incidentally, I feel the same way about periodic assessments of everyone

in the health care field, whether they be general practitioners, surgeons or salesmen.

Value of Sampling

I personally am in favor of limited sampling. I do not use sampling in order to perform clinical testing of a drug. I feel that drug testing should rightly be left to the pharmacology researcher and to the large teaching institutions where such testing can be done in a controlled environment.

I do not use samples as a "starter dose" for my patients. I do, however, find samples of drugs to be of value in that they permit me to see what the particular medication looks like. I get to see the various forms of the particular medication at first hand, and if it is in a liquid form I take the time to taste it. In that way I am able to give my patients more complete information about the particular medications that I prescribe for them.

capacity they are indeed useful; particularly in the fact that they disseminate broadly based educational material and serve not just as "pushers" of their drugs.

The Other Side of the Coin

Obviously, the pharmaceutical companies are not producing all this material as a labor of love—they are in the business of selling products for profit. In this regard the ambitious and improperly motivated sales representative can exert a negative influence on the practicing physician, both by presenting a one-sided picture of his product, and by encouraging the practitioner to depend too heavily on drugs for his total therapy. In these ways, the salesman has often distorted objective reality and undermined his potential role as an educator.

The Industry Responsibility

Since the detail man must be an information resource as well as a representative of his particular pharmaceutical company, he should be carefully selected and

thoroughly trained. That training, perforce, must be an ongoing one. There must be a continuing battle within and with the pharmaceutical industry for high quality not only in the selection and training of its sales representatives, but also in the development of all of its promotional and educational material.

The industry must be ready to accept constructive as well as corrective criticism from experts in the field and consumer spokesmen, and be willing to accept independent peer review. The better educated and prepared the salesman is, the more medically accurate his materials, the better off the pharmaceutical industry, health professionals and the public—i.e., the patients—will be.

Physician Responsibility

The practicing physician is in constant need of up-dated information on therapeutics, including drugs. He should and does make use of drug information and answers to specific questions supplied by the pharmaceutical representative. However, that informa-

tion must not be his main source of continuing education. The practitioner must keep up with what is current by making use of scientific journals, refresher courses, and information received at scientific meetings.

The practicing physician not only has the right, but has the responsibility to demand that the pharmaceutical company and its representatives supply a high level of valid and useful information. I feel certain that if such a high level is demanded by the physician as well as the public, this demand will be met by an alert and concerned pharmaceutical industry.

From my experience, my impression is that sectors of the pharmaceutical industry are indeed ethical. I challenge the industry as a whole to live up to that word in its finest sense.

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Herbert J. Wright, M.D., 45 Golder St., Lewiston 04240 (3 yrs.)

Committee on Peer Review

Richard T. Chamberlin, M.D., Thayer Hospital, Waterville
04901 (3 yrs.) — Chairman
Euclid M. Hanbury, Jr., M.D., Medical Bldg., Belfast 04915 (3
yrs.)
John P. Dow, M.D., Grove Hill, Pittsfield 04967 (3 yrs.)
Henry J. Wheelwright, M.D., Augusta Gen. Hospital, Augusta
04330 (3 yrs.)
Ronald J. Carroll M.D., 255 Western Prom., Portland 04102 (1
yr.)
Arthur K. Carton, M.D., 7 Park St., Houlton 04730 (1 yr.)
Richard L. Chasse, M.D., 18 Park St., Waterville 04901 (1 yr.)
Wilfrid A. Cloutier, M.D., 646 Main St., Lewiston 04240 (1 yr.)
Hans A. Holzwarth, M.D., 336 Mt. Hope Ave., Bangor 04401 (2
yrs.)
George F. Sager, M.D., 7 Bramhall St., Portland 04102 (2 yrs.)
Robert F. Ficker, M.D., Maine St., Kennebunkport 04046 (2
yrs.)
Richard M. Swengel, M.D., 477 Main St., Lewiston 04240 (2
yrs.)
Floyd B. Goffin, M.D., 56 Baribeu Dr., Brunswick 04011 (2
yrs.)

Council on Medicine and Law

Committee on Ethics and Discipline

Bruce Trembly, M.D., 325 Kennedy Mem. Dr., Waterville 04901
(3 yrs.) — Chairman
Waldo A. Clapp, M.D., 215 College St., Lewiston 04240 (3 yrs.)
Thomas W. Williams, M.D., 22 White St., Rockland 04841 (1 yr.)
Dexter E. Elsemore, M.D., 11 Main St., Dixfield 04224 (1 yr.)
John C. Van Pelt, M.D., 50 Union St., Ellsworth 04605 (2 yrs.)
Peter F. McGuire, M.D., Peary Dr., Brunswick 04011 (2 yrs.)

Committee on Legislation

Brinton T. Darlington, M.D., 89 Hospital St., Augusta 04330 (2
yrs.)
Francis I. Kittredge, M.D., 109 State St., Bangor 04401 (2 yrs.)
H. Carl Amrein, M.D., 29 Weston Ave., Madison 04950 (1 yr.)

Lloyd G. Davies, M.D., 249 Ocean House Rd., Cape Elizabeth
04107 (1 yr.)
Kevin Hill, M.D., 325A Kennedy Mem. Dr., Waterville 04901 (3
yrs.)

Committee on Professional Liability

Thomas A. Martin, Sr., M.D., 157 Pine St., Portland 04102 —
Chairman
John A. Root, M.D., 22 White St., Rockland 04841
George L. Maltby, M.D., 31 Bramhall St., Portland 04102
Allan J. Stinchfield, M.D., P.O. Box 343, Augusta 04330
James H. Bonney, M.D., 53 Chadwick St., Portland 04102
John P. Dow, M.D., Grove Hill, Pittsfield 04967

Medical Symposium — "Successes in Cancer Management Today — Techniques and Results of Screening for Asymptomatic Cancers"

On Wednesday, December 4, 1974, the Metropolitan Boston Unit of the American Cancer Society and the Greater Boston Medical Association invites physicians, residents, interns, students and nurses to attend their sixth annual medical symposium, "Successes in Cancer Management Today — Techniques and Results of Screening for Asymptomatic Cancers."

Beginning at 11:30 a.m. and running until 8:30 p.m., "Medical Symposium VI" will consist of at least six workshops, four lectures, an open panel discussion on "Screening for Colon Cancer," dinner and a special address by Guest Speaker, Ernest L. Wyndner, M.D., President of the American Health Foundation, New York.

The symposium has been approved for five elective hours by the American Academy of Family Physicians.

Anyone interested in registering for "Medical Symposium VI" should contact M. Louise Rose, American Cancer Society, 138 Newbury Street, Boston, Massachusetts 02116 or phone 267-2650 before November 8, 1974.

From the Secretary's Notebook

Summary of 1974 Annual Meeting of the M.M.A. House of Delegates June 15 and 16 at Kennebunkport, Maine

The 121st annual session of the M.M.A. House of Delegates was held at the Shawmut Inn, Kennebunkport, Maine, with an attendance of seventy-four delegates and alternates, and forty guests. The first session was held on Saturday afternoon at 2:00 P.M., and the second session on Sunday afternoon at 2:00 P.M. Paul A. Fichtner, M.D., President of the M.M.A., called to order the meetings of the House, which were presided over by George W. Bostwick, M.D., Speaker of the House.

Election of Speaker and Vice Speaker of the House of Delegates for 1974-1975 — George W. Bostwick, M.D., was re-elected Speaker of the House of Delegates and Richard M. Swengel, M.D., Vice Speaker of the House.

Budget for 1975 — The reference committee recommended that the President's stipend be increased from \$2,000 to \$5,000 annually, and this was *approved*. With this one amendment, the Budget for 1975 was *approved* as presented.

Committee on Nominations — The following slate was presented by this committee:

President-Elect

Donald L. Anderson, M.D. and Robert F. Ficker, M.D.

Executive Committee

3rd District — Richard C. Leck, M.D. and Robert H. Eddy, M.D.

7th District — Paul J. LaFlamme, M.D. and Rudolph Haas, M.D.

8th District — Thornton W. Merriam, Jr., M.D. and Charles H. Lightbody, M.D.

It was announced that Drs. Eddy, LaFlamme and Haas are unable to accept the nomination. Nominations from the floor included Euclid M. Hanbury, Jr., M.D. for President-elect; Herbert J. Wright, Jr., M.D. for the 7th District. The following officers were elected:

President-Elect

Euclid M. Hanbury, Jr., M.D.

Executive Committee

3rd District — Richard C. Leck, M.D.

7th District — Herbert J. Wright, Jr., M.D.

8th District — Thornton W. Merriam, Jr., M.D.

The Standing Committees, as recommended by the Committee on Nominations, were approved as presented.

Reports (not included in the House of Delegates' folder) —

Executive Director — Dr. Daniel Hanley's report covered many subjects including National Health Insurance, Health Manpower, Medical and Surgical Data, and a hypothetical case of suit.

Professional Liability — The Chairman, Dr. Thomas A. Martin, Sr., reported on claims figures from various insurance companies insuring companies insuring Maine physicians. The reference committee recommended that this Committee find out the individual malpractice experience of members of the M.M.A.; and second, attempt to formulate a plan similar to the Medical-Legal Panel as now embodied in the State of New York. This was *approved* by the House.

Diabetes — Dr. Melvin Bacon, Chairman, gave a brief report. A copy of the complete report was mailed to members of the House of Delegates. The House *voted* acceptance of this report and recommended to the Executive Committee that it study the question of selective screening for various diseases throughout the State.

Peer Review Committee — Dr. Richard T. Chamberlin, Chairman, reported on the 5/29 meeting of the Committee which dealt mainly with the organization and projected work of the Pine Tree Organization for Professional Standards Review, Inc. (PTO) — the PSRO for Maine. The Peer Review Committee agreed to endorse the annual report as prepared for the House of Delegates, and in addition, agreed that Dr. Chamberlin should include as part of his supplementary verbal report an invitation to members of the M.M.A. to join the PTO. The House *voted* acceptance of the report and recom-

mended membership in PTO to members of the M.M.A.

RESOLUTIONS

Affiliate membership — Submitted by Kennebec County, this resolution *was approved*:

RESOLVED: That Chapter 1, Section 5 of the Bylaws shall be and hereby is amended by deleting the period at the end of the first sentence, substituting therefore a comma, and adding the following phrase, "or for other compelling reasons," so that this first sentence shall read as follows: "Affiliate members may be elected by the House of Delegates from those who are members in good standing of this Association, upon recommendation of their respective county societies, when they have retired from active practice, or when they have been physically disabled, or for other compelling reasons."

Acupuncture — This resolution, submitted by the Cumberland County Medical Society, was *approved*:

WHEREAS, acupuncture has been reported to be useful in the symptomatic relief in a number of painful conditions and has been shown to be effective in surgical analgesia;

WHEREAS, its usefulness in the curative treatment of medical conditions has not been demonstrated and the small series of patient trials hitherto reported by acupuncturists generally have not been well-controlled studies;

THEREFORE, be it resolved that the Maine Medical Association endorse the research by teaching medical centers to investigate the usefulness of acupuncture for treatment and pain control. On the other hand, we do not, at this time, endorse acupuncture clinics staffed by non-M.D.'s (even though supervised by physicians). We do feel there is a place and a need for limited acupuncture investigation and treatment as a research project, to be supervised carefully by a multi-disciplinary group of medical specialists.

Statewide Tumor Registry — This resolution, submitted by Stanley C. Beckerman, M.D., was *tabled* and referred to the Special Committee on Tumor Registry.

Androscoggin County #1 — This resolution, resolving that "the care of psychiatric patients within the community mental health centers and State hospitals be under the direct control of Psychiatrists and that administration be redefined to assist rather than direct the Psychiatrist" was *referred to the Executive Committee*, with the request that the E.C. report to the House of Delegates at its Fall Meeting.

Androscoggin County #2 — This resolution was *approved*:

WHEREAS the diagnostic and therapeutic needs of a patient are the same, no matter if treated by a physician in the hospital or in a physician's office,

WHEREAS third-party health insurance carriers have developed discriminatory policies on payment of patients' benefits and treatments, in that the cost of many supplies, laboratory tests, and treatments performed in the hospital are reimbursable, and the same performed in a physician's office are not reimbursable,

THEREFORE BE IT RESOLVED by the Maine Medical Association that it shall oppose these discriminatory practices and so notify all major health insurance third parties, *and that the Maine Medical Association is prepared to take action* if adequate resolution of these inequities by the third party health insurance carriers is not accomplished.

Knox County #1 — This resolution, as amended, was *approved*:

WHEREAS: New rulings by the Department of Health, Education and Welfare and its fiscal intermediaries have denied payment for transporting patients by ambulance within our service area and to nursing homes and other medical facilities outside our service area where medically justified,

WHEREAS: Physicians of the Knox County Medical Society are morally charged with the responsibility of seeking the best possible medical care patients in their charge;

WHEREAS: Physicians have lost their prerogative to transport patients to another hospital of choice based on patient needs;

RESOLVED that the Maine Medical Association take positive action with the Department of Health, Education and Welfare and its fiscal intermediaries in an effort to correct present deficiencies and thereby avoid a loss of services required by our patients.

Knox County #2 — This resolution re payment for "gang visits" was *defeated*.

Knox County #3 — This resolution was *approved*:

WHEREAS: Third-party payers of medical insurance, including Union Mutual Life Insurance Company, and the State of Maine Department of Health, Education and Welfare, have arbitrarily divided the State of Maine into three Districts for purpose of payment;

WHEREAS: A different fee schedule has been established in each of the three Districts with considerable discrepancy in fees between the three Districts;

WHEREAS: Modern transportation and communications have broken down geographic isolation such that modern standards of medical practice demand that the same high caliber medical care be practiced in remote rural areas as practiced in the more urban areas, the Knox County Medical Society:

PROPOSES: That the practice of three separate levels of fee reimbursement be abandoned and a unified fee schedule be established for the State of Maine as one single District.

The reference committee recommended that the Executive Director of the M.M.A. write a letter to Mr. John Fickett of the State Bureau of Medical Care, recommending review of the State-wide fee schedule into a uniform, single State-wide schedule. This was *approved*.

Committee on Conservation of Vision — This resolution, as amended was *approved*:

WHEREAS, the administration or prescription of drugs or medications — even topically for the eye or its adnexa — or any surgical procedure including the removal of foreign body from the eye or its adnexa — constitutes the practice of medicine; and

WHEREAS, optometrists have not passed the examination required by the Medical Practice Act for the practice of medicine;

THEREFORE BE IT RESOLVED that the Maine Medical Association, for the purpose of conservation of vision and for safe and proper examination and treatment of patients opposes the use of drugs or medications by optometrists or surgery by optometrists including the removal of any foreign body from the eye or its adnexa, and

THEREFORE BE IT FURTHER RESOLVED that the Maine Medical Association directs its legislative committee to oppose legislation giving statutory permission for such practice.

Committee on Maternal and Child Welfare #1 — This resolution was *approved*:

WHEREAS the best interest of each child is served by continuity of medical care; and

WHEREAS the fragmentation of medical care may be detrimental to the physical and emotional health of a child;

THEREFORE BE IT RESOLVED: That the Maine Medical Association urges the Department of Health and Welfare that all examinations and screening tests performed in governmental projects such as Early Periodic Screening Diagnosis and Treatment (EPSDT), Headstart, and Daycare programs, be done under the direct supervision of the physician or clinic responsible for the ongoing medical care of each child and that a copy of this resolution be sent to the Governor of our State, the Commissioner of Health and Welfare, and the

Director of the Bureau of Health.

Committee on Maternal and Child Welfare #2 — This resolution was *approved*:

WHEREAS genetic disease contributes to considerable morbidity in this State,

THEREFORE BE IT RESOLVED: That the Maine Medical Association urges the Department of Health and Welfare to increase its efforts in behalf of the establishment of an adequate genetic disease program.

Committee on Maternal and Child Welfare #3 — This resolution was *approved*:

WHEREAS there is a high incidence of dental caries in children in our State; and

WHEREAS dental and medical research has definitely proved that fluoride reduces the incidence of dental caries without impairment to health;

THEREFORE BE IT RESOLVED: That the Maine Medical Association urges all communities in the State to fluoridate their water supplies, and encourages county medical societies to exert their influence to expedite the fluoridation of local public water supplies; and

BE IT FURTHER RESOLVED: That the Maine Medical Association encourages the medicinal treatment with fluoride of all children who do not drink fluoridated water.

Committee on Maternal and Child Welfare #4 — This resolution re the battered child syndrome was *referred back to the Committee*.

Committee on Maternal and Child Welfare #5 — This resolution, as *amended*, was *approved*:

WHEREAS the House of Delegates of the Maine Medical Association has on two separate occasions already recommended the mandatory inclusion of care of newborns for the first 14 days of life in all health insurance contracts in this State; and

WHEREAS certain health problems in children are readily identified and best treated in the first days of life, which problems may impose a high financial burden; and

WHEREAS the assistant general counsel of the Health Insurance Association of America has developed the following legislation which is compatible with the laws of the State of Maine;

THEREFORE BE IT RESOLVED: That the Maine Medical Association directs its Legislative Committee to encourage the passage as soon as possible of the following bill (on file at M.M.A. office.)

Committee on Maternal and Child Welfare #6 — This resolution was *approved*:

WHEREAS the House of Delegates of the Maine Medical Association at its fall meeting in Bangor on December 9, 1973, approved an act in regard to minors' consent to health services; and

WHEREAS certain minors are not obtaining adequate medical, dental, or health care due to current legal and medical obstacles; and

WHEREAS providers of medical, dental, and other health care are still vulnerable to legal action for giving care to minors;

THEREFORE BE IT RESOLVED: That the Maine Medical Association directs its Legislative Committee to take whatever action necessary to promote the early passage of the Model Bill for Minors' Consent for health services as approved at the meeting on December 9, 1973.

Maine Association of Medical Assistants — Mrs. Mary Goodwin, President, explained that the primary aim of their group is geared to continued education of the medical assistant in order to give honest, loyal and efficient service to the profession and to the public which it serves. She pointed out the current activities of the Association and urged physicians to encourage their secretaries to join.

Medical Education in Maine — Dr. Robert Coon, Assistant Chancellor for Health Science Education, University of Maine, reported on the progress in terms of developing a medical education program in Maine. They have been exploring the possibility of contracting for the basic science instruction and also the possibility of instituting a basic science education program in Maine. Plans are to submit for accreditation and funding assistance by 9/1/74, if formal action is taken by the U of M Board of Trustees in July. A meeting is planned also with the Legislative Council. Potentially, we could have the first students enrolled in the basic program in 9/75; however, if we have to develop our own basic science program, it is more likely to be 9/76, Dr. Coon concluded.

Medical Examiner Awards — Charles F. Branch, M.D., Chief Medical Examiner for Maine, presented 15 awards to medical examiners for their dedicated service to the State.

Senior Medical Consultants — In addition to a written report, Dr. Alfred Hurwitz reported that he proposed Maine start a Senior Medical Consultants Program — physicians who have retired from active practice. They will go where invited — to hospitals to have informal rounds and see problem cases, to discuss administrative problems, etc. They have experience with utilization programs, quality assurance programs, PSRO, etc. Their aim is to utilize their time in the best way for the betterment of patient care in the State of Maine. The House of

Delegates *approved* this program and recommended that they send information on Senior Medical Consultants to the education committee of each hospital in the State.

Maine Blue Cross and Blue Shield Award of Appreciation — This award was presented to Dr. Charles W. Steele of Lewiston by Mr. Richard F. Nellson, President of Maine BCBS.

Blood Banking in Maine — Dr. Joseph Stocks, Pathologist at the Maine Medical Center, spoke re the problem of the blood supply in Maine. Acceptance of the Red Cross proposal for blood banking in Maine is helping to solve the problems. Working with Regional Blood Banks, they are trying to increase blood recruitment and to effect a natural transition from RBB to ARC, to be effective by October 1, 1974. Dr. Stocks asked for the support and commitment of every physician in the State to assist in blood recruitment.

A. H. Robins Co. Community Service Award — The Community Service Award for 1974 was presented to Dr. Maurice Ross of Saco.

Re-assessment of PSRO — There have been changes in attitude by many States, Dr. Fichtner reported. The M.M.A. has made an assessment, and has once re-affirmed that position; it behooves us to give direction to our AMA delegate and alternate so they can vote at the AMA annual convention, Dr. Fichtner added. The House of Delegates *voted* to reaffirm its position taken last year re PSRO, and further, *endorsed* the N.E. resolution #10 dealing with PSRO, which will be submitted at the AMA convention. That resolution "recognizes the existence of good features of the PSRO law and reaffirms its desire to see the law improved by constructive amendment. . . ."

Woman's Auxiliary to the M.M.A. — A written report by Mrs. Robert S. LaFond, President, was *accepted*. The House of Delegates *recommended* that the Auxiliary, through our direction, channel their activities in one specific direction, and asked each physician to urge their wife to get involved in the Auxiliary.

Out-of-State Delegates and Guests — The following guests were introduced — Dr. Louis F. Alfano, Mass.; Dr. Jean A. Curran, Mass.; Dr. Keith O. Guthrie, Jr., N.Y.; Dr. Robert Conrad, R.I.; Dr. Bernard O. Nemoitin, Conn.; Dr. Paul E. Emery, N.H.

Delegates to Connecticut and Massachusetts Medical Society Meeting — Dr. Paul Fichtner, President,

Continued on Page 229



NEW PROGRAMS

Dwight Edwards, Director of Group Enrollment for Maine Blue Cross and Blue Shield, has announced that '80% UCR,' a new level of Blue Shield coverage, will be available to groups of 10 or more employees this fall. The program is designed to pay 80% of the usual, customary and reasonable charges for physicians' services.

Medical and surgical services as well as obstetrical, inpatient and outpatient diagnostic, and anesthesiologist's services will be included as benefits, as they are in other Blue Shield programs.

"The major difference between '80% UCR' and other Blue Shield programs," reflected Mr. Edwards, "is that Blue Shield 'C' and 'D' provide reimbursements to the physician on the basis of a schedule of allowances, while '80% UCR' will pay strictly on a percentage basis.

"The advantage of having the '80% UCR' program is that it automatically keeps up with inflation by providing a guaranteed payment of 80% of the fee that is *usual* for that particular physician, *customary* for other physicians of similar training and experience within the same geographic area, or *reasonable* for any unusual circumstances requiring extra skill or experience by the physician. Having the '80% UCR' Blue Shield program is similar to having the Blue Cross full semi-private room allowance since both programs allow for fluctuations in cost unlike the 'dollar-per day' benefit plans or a schedule of allowances which remain constant.

"The development of the '80% UCR' Blue Shield program is indicative of our response to the demands of our subscribers for a broader variety of healthcare programs for Maine."

PRESCRIPTION DRUG PLAN

The Maine Blue Cross and Blue Shield Board of Directors recently approved the Prescription Drug Plan which has been in the development process for the last 18 months. The plan is now being filed with the Bureau of Insurance and it is hoped that we will begin to offer it to our subscribers later this year.

The Prescription Drug Plan, which will be offered to groups of 25 or more employees, was developed to help our subscribers meet the rising use and cost of prescription drugs. Statistics show that in 1972, Maine people purchased over \$23 million worth of prescription drugs from 212 pharmacies. In 1943, people purchased an average of 1.7 prescription drugs as compared to 5.2 in 1972, and the average prescription drug cost per family has risen from \$12 in 1943, to \$77 in 1972.

Prescriptions that will be covered under this newly formed program include: those for up to a 34 day supply of prescribed drugs, those for insulin, prescription orders for drugs for chronic illness up to 100 tablet or capsule quantities and refill prescriptions authorized by a physician. A full service plan and two types of copayment plans will be available.

THURSTON — PTOPSR DIRECTOR

Ronald G. Thurston, formerly Director of Utilization Review and Provider Relations at Maine Blue Cross and Blue Shield, is now the Executive Director of the Pine Tree Organization for Professional Standards Review, which received a six-month grant from the Department of Health, Education and Welfare for planning and implementation of professional standards review in Maine.

Thurston's duties as Executive Director include assisting in the recruitment of physician members, developing a formal plan for the assumption and implementation of PSRO duties and functions, acquiring the data necessary for the development of the review plan and developing a plan to integrate professional standards review into continuing medical evaluation. In addition, he is responsible for managing the organization's personnel and for maintaining all accounts and records as well as acting as a liaison for the organization among all major segments of the State healthcare system. He is a graduate of the University of Maine at Orono.

PSRO in Maine — An Update

RICHARD T. CHAMBERLIN, M.D.

The PSRO program has been discussed conceptually as well as detailed specifically in several issues of this journal in the past year.^{1,2,3,4} The present article is designed to bring its readers up to date with recent developments, both nationally and locally. It also will serve as an additional invitation to all physicians practicing in Maine to join the Pine Tree Organization For Professional Standards Review, Inc. (PTO).

Nationally, the PSRO program became a more visible reality on July 1, 1974 as the first contract awards were made to organizations applying to the Department of Health, Education, and Welfare in Washington, D.C. for PSRO status. The awards were made in three categories — planning, conditional, and statewide support centers. The Pine Tree Organization was one of ninety-one groups which was awarded planning contracts, while eleven groups received conditional contracts. In addition, thirteen support centers were funded. It is interesting and important to note that these groups represent 172,211 physicians and include PSRO areas which cover 130 million United States citizens.

Within the State of Maine, the Pine Tree Organization For Professional Standards Review, Inc. has been involved in several important organizational activities. Since its incorporation on May 8, 1974 as a non-profit corporation open to membership by all allopathic and osteopathic physicians practicing in the State, the following has been accomplished:

1. Application for and receipt of funds on July 1st from the Department of Health, Education, and Welfare for planning purposes.
2. Establishment of an office at —
99 Western Avenue, Augusta, Maine 04330
with a mailing address of —
P.O. Box 706, Augusta, Maine 04330, Telephone: 622-9368
3. Hiring of a staff.
 - A. Executive Director: Mr. Ronald Thurston, formerly employed by Associated Hospital Services of Maine.
 - B. Executive Secretary: Mrs. Alma Hinckley.

The Pine Tree Organization is also excited about being included in an important research project using private funds from the W. K. Kellogg Foundation of Battle Creek, Michigan for the purpose of studying the effects of PSRO upon the quality and costs of medical care. The details of this project will be released at a later date, but involvement in the project should assist the Maine organization to attain its goals as an organization that meets the needs of both the physicians and of the people of the State of Maine.

An extremely vital activity since July 1st has been recruitment of membership. As of 21 August 1974, 190 physicians in Maine have joined the Pine Tree Organization and applications are being received daily.

A frequently asked question is — “What advantages and/or disadvantages are there to becoming a member of the Pine Tree Organization?” Several answers may be given.

1. By statute, the Pine Tree Organization will be held responsible for the review of medical care rendered and reimbursable under the governmental programs of Medicare, Medicaid, and the Maternal and Child Health Divisions of the Department of Health and Welfare. This responsibility exists whether or not a particular physician chooses to join the PSRO. Thus, by not joining, a physician finds himself subject to the review of an organization to which he has no relationship and no official lines of communication.
2. The PSRO statute allows for a local PSRO to delegate its review responsibilities to a hospital medical staff if it can be shown that that hospital medical staff is willing and capable to do the required reviews in a timely manner. Most PSRO's and most hospital medical staffs have expressed an interest in this type of hospital-based responsibility for review. However, the PSRO Program Manual clearly states that among the prime requisites to be met by a hospital staff prior to the delegation of review responsibilities is that at least fifty percent of that hospital staff must be members of the local PSRO.
3. Members of the corporation may serve on the Nominating Committee or may submit and/or vote for members of the Board of Directors, which is the major policy-making body of the organization.
4. Membership does not lock a physician into anything. It is as easy to resign membership as it is to join — that is — simply by notifying the clerk of the corporation in writing on a specified form.

The Board of Directors of the Pine Tree Organization wish to emphasize that the act of joining the Pine Tree Organization is *not* an endorsement of the PSRO program per se, but rather indicates

support of the Pine Tree Organization as an acceptable working force in the PSRO development and implementation in the State of Maine.

The Board of Directors of the Pine Tree Organization invites all physicians licensed to practice in the State of Maine to join the organization. A membership application follows. Please complete it and forward it to the Pine Tree Organization for Professional Standards Review, Inc., P.O. Box 706, Augusta, Maine 04330.

REFERENCES

1. Bonney, James H., M.D., J.D.: PSRO's, An Analysis From The Law. Journal of the Maine Medical Association, Vol. 65, pp. 8-11, 1974.
2. Chamberlin, R. T., M.D.: Improving The Quality Of Medical Care — A Very Mixed Bag. Journal of the Maine Medical Association, Vol. 65, pp. 19-27.
3. Chamberlin, R. T., M.D.: PSRO In Maine, Pine Tree Organization For Professional Standards Review — Assuring The Quality of Care For Maine. Journal of the Maine Medical Association, Vol. 65, pp. 156-157, 1974.
4. Chamberlin, R. T., M.D.: PSRO In Maine, Pine Tree Organization For Professional Standards Review — Assuring The Quality Of Care For Maine. Journal of the Maine Medical Association, Vol. 65, pp. 190-191, August 1974.

ADDENDUM

NOTE: The House of Delegates of the Maine Medical Association voted on June 16, 1974 to continue qualified support of PSRO development in Maine, adding the recommendation that members of the Maine Medical Association should join the Pine Tree Organization For Professional Standards Review, Inc. The American Medical Association's House of Delegates passed the following resolution on June 26, 1974 in Chicago:

"Resolved, That this House of Delegates instruct the Board of Trustees of the Association to direct its efforts to achieve constructive amendments to the PSRO law and to ensure appropriate regulations and directives, with particular effort directed at amending those sections of the law which present potential dangers in the areas of confidentiality, malpractice, development of norms, quality of care, and the authority of the Secretary of HEW; and be it further

"Resolved, That the Association should continue its efforts to achieve legislation which allows the profession to perform peer review in accordance with the profession's philosophy and the best interest of the patient; and be it further

"Resolved, That individual state associations which elect non-participation shall not be precluded from such a position by this Association's policy statement, but should be urged to develop effective non-PSRO review programs which embody the principles endorsed by the profession as constructive alternatives to PSRO; and be it further

"Resolved, That if ongoing evaluation of the PSRO program reveals that it does, in fact, adversely affect the quality of patient care, or conflict with the Association policy, the Board of Trustees be instructed to use all legal and legislative means to rectify these shortcomings."

PINE TREE ORGANIZATION FOR PROFESSIONAL STANDARDS REVIEW, INC.

MEMBERSHIP APPLICATION

I, _____, presently admitted to practice medicine in the State of Maine, hereby apply for membership in the Pine Tree Organization for Professional Standards Review, Inc.

I understand that there are no financial commitments (i.e. dues) as a condition to my membership and that my membership shall continue as long as I am licensed to practice medicine in the State of Maine or until I voluntarily elect to resign. Resignation may be made at any time in writing directed to the Clerk of Pine Tree Organization for Professional Standards Review, Inc.

.....
Date

.....
Name

.....
Street

.....
City

.....
County

Special Article

Rheumatic Fever VI: Low Cost Penicillin For Rheumatic Fever Prophylaxis

The Maine Heart Association, in conjunction with the Maine Pharmaceutical Association and the Maine Drug Wholesalers, and with the approval of the Maine Medical Association and the Maine Department of Health and Welfare, has initiated a program for making available to patients who have had rheumatic fever, penicillin at low cost for rheumatic fever prophylaxis.

HOW THE PROGRAM WORKS

Any patient, private or clinic, with a diagnosis of rheumatic fever or rheumatic heart disease, past or present, is eligible. Diagnosis, in so far as possible, should be based on the modified Jones criteria.

1) The physician completes the accompanying application and returns it to the Maine Heart Association.

2) By return mail, a pad of four special prescriptions will be sent to the physician. These will be marked with the doctor's name or clinic's name, the patient's name, and the patient's registration number.

3) Each prescription will be made out for 100 tablets of 200,000 units of penicillin G, allowing one tablet daily for three months. Cost for 100 tablets is \$2.00.

4) The prescription need only be signed by the physician and dispensed quarterly.

5) The patient may have the prescription filled by any pharmacist who is a member of the Maine Pharmaceutical Association.

6) Included in the prescription pad is a reapplication form which should be filled out by the physician and mailed to the Maine Heart Association when the fourth prescription is dispensed.

7) If a patient fails to fill his prescription in a reasonable period of time, the physician will be advised of the delinquency.

8) The Heart Association is anxious to assess the effectiveness of the program in preventing recurrence of rheumatic fever. A card for reporting recurrence is included with the prescription pad.

9) At present, there is no provision in this program for providing penicillin free of charge to medically indigent patients. If there should prove to be a significant need for such a provision, appropriate efforts will be made in respect to it.

This program is initiated on the basis of the established fact that continuous chemoprophylaxis is the only effective way to prevent recurrences of rheumatic fever. The dose of penicillin may perhaps be modified in the future consistent with the recommendations of the American Heart Association. The cooperating organizations hope to stimulate more widespread use of chemoprophylaxis by making penicillin available at low cost and also by assisting the physician in follow-up of the patient to assure that the drug is faithfully taken.

W. M. Blackwell, M.D.
W. P. C. Clason, M.D.
B. S. Ferguson, M.D.
J. T. Y. Gillies, M.D.
H. L. Harper, M.D.
C. H. Lightbody, M.D.
E. C. Matthews, M.D.

C. H. Okey
D. M. Robertson, M.D.
C. Salisbury
P. Sanfacon, M.D.
T. Townsend, M.D.
G. I. Wilson, M.D.
J. R. Wise, M.D., *Chairman*
Rheumatic Fever Committee

Rational Use of Psychotropic Drugs

II. Antianxiety Agents

DAVID J. GREENBLATT, M.D. and RICHARD I. SHADER, M.D.

Anxiety and fear describe a constellation of psychophysiological responses to perceived threat or danger.¹⁻⁴ Both anxiety and fear elicit similar responses, but in the case of anxiety the response is inappropriate to the actuality of the danger. Whether anxiety is truly pathological may be difficult to assess. Some overtly anxious individuals are virtually disabled by their fear of threats which are relatively minor or nonexistent. In others, signs and symptoms develop in direct response to stressful life events, and may be almost indistinguishable from appropriate fear.

Anxiety can elicit both psychic and somatic manifestations. Common psychic signs include excessive worry, overconcern, tension, irritability, and inability to concentrate. Somatic manifestations may include agitation, restlessness, difficulty falling asleep, tremor, breathlessness, tachycardia, palpitations, diaphoresis, headache, vague abdominal or chest pain, nausea, diarrhea, or urinary frequency. Most anxious individuals have both psychic and somatic symptoms. Occasionally, a patient will complain only of somatic symptoms with no overt manifestations of psychic anxiety.

Regardless of its particular clinical dossier, anxiety characteristically is an episodic disorder with multiple remissions and exacerbations. Anxiety provoked by identifiable stressful life events is termed "situational." It can be "anticipatory" and have definite phobic aspects. When episodes appear to be unprovoked and spontaneous, anxiety is described as "free-floating." Some individuals may have extremely incapacitating spontaneously-appearing panic attacks. Not uncommonly the patterns are mixed. Anxious anticipation of panic at-

tacks may, in fact, precipitate such attacks.

Thus, anxiety is a common clinical syndrome with numerous possible manifestations, many of which are vague and ill-defined. It is no surprise that anxiety, unlike insomnia, defies adequate quantitation. Many methods have been devised to measure clinical anxiety but none is totally adequate. Because of these methodological problems and because of the inherently episodic natural history of the disorder, it can be exceedingly difficult to establish that a particular drug used to treat clinical anxiety is in fact more effective than an inert placebo.

PHARMACOTHERAPY OF ANXIETY

The ideal antianxiety agent is a drug that would specifically reduce or eliminate a patient's symptoms without causing drowsiness or impairment of psychomotor function. Some classes of drugs approach this ideal more closely than others, but none is totally specific for anxiety. Anxiolytics share with hypnotics the pharmacologic property of dose-dependent central nervous system depression. Drowsiness, sleep, and finally coma are produced by progressively larger doses. Hypnotics and anxiolytics are so alike that the same drug (e.g., phenobarbital) can be used in high doses to induce sleep and in lower doses to reduce anxiety.

Among hospitalized patients anxiety is usually a response to the circumstances of hospitalization. This "situational" anxiety may in fact constitute appropriate fear. Physicians frequently administer antianxiety agents to hospitalized patients particularly when their emotional discomfort is severe. The sympathetic nervous system activity associated with anxiety could in theory exacerbate certain pathologic processes such as ischemic heart disease and peptic ulcer.⁵ Patients with these disorders frequently are treated with anxiolytics in the hope that such drugs will be useful adjuncts in arresting the progression of disease or in promoting remission. The hazards of antianxiety drug therapy are the same as those described for hypnotic drug use.⁶ Anxiolytics are clearly inappropriate for patients whose anxiety or agitation is due to hypoxia, pain, hypoglycemia, or cerebral edema.

Surveys of the extent of outpatient psychotropic

Drug Therapy Reviews is supported by a grant from the Bingham Associates Fund.

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TABLE I

DOSES AND WHOLESALE PRICES OF ANTIANXIETY AGENTS

Generic Name	Trade Name	Range of Usual Daily Doses (mg)	Unit Oral Doses (mg)	Price per 100 Dose Units
<i>Barbiturates</i>				
Phenobarbital	(generic)	45-200	15	\$0.35*
			30	0.40*
Butabarbital	(generic)	45-200	15	0.65*
			30	0.99*
Amobarbital	Amytal	45-200	15	0.84
			30	1.13
<i>Propanediols</i>				
Meprobamate	Miltown	1200-1600	400	6.50
			600	8.75
	Equanil		400	7.06
	(generic)		400	0.75*
Tybamate	Tybatran	750-2000	250	7.45
			350	9.70
<i>Benzodiazepines</i>				
Chlordiazepoxide	Librium	15-100	5	5.26
			10	6.82
			25	9.78
Diazepam	Valium	6-40	2	6.70
			5	8.10
			10	11.10
Oxazepam	Serax	30-120	10	5.82
			15	7.23
			30	10.05
Clorazepate	Tranxene	11.75-60.00	3.75	6.00
			7.5	9.00
			15.0	15.00
<i>Antihistamines</i>				
Hydroxyzine	Vistaril,	30-200	10	5.14
	Atarax		25	9.64
			50	11.77
<i>Beta-Adrenergic Blockers</i>				
Propranolol**	Inderal	30-120	10	3.50
			40	5.90

*Lowest price given when many are quoted.

**Not approved by the Food and Drug Administration for the treatment of anxiety.

drug use show that approximately 15% of adult Americans take antianxiety agents.^{7,8} Superficially these findings suggest that symptomatic anxiety is very prevalent, if not epidemic, in the adult population, and that physicians commonly resort to pharmacotherapy to provide relief of symptoms. One may question, however, whether clinically significant anxiety is so widespread and severe as to justify the extensive use of these drugs. Anxiolytics, like hypnotics, can produce symptomatic relief but do not by themselves influence the intrapsychic conflicts and interactions between psyche and environment that give rise to emotional discomfort. The extensive, if not excessive, prescribing of anxiolytic drugs probably reflects physicians' feelings that symptomatic pharmacotherapy is more humane, expeditious, and possibly more effective than the time-consuming and sometimes painful psychotherapeutic processes necessary to achieve lasting solutions to neurotic anxiety.

CHOICE OF ANTIANXIETY AGENT

Commonly used anxiolytic drugs (Table I) differ

considerably in efficacy, safety, and toxicity, and cost. All of these must be considered before a particular drug is chosen. For any given antianxiety agent, the range of usual effective daily dosage is very large. Differences among individuals in the extent of drug absorption from the gastrointestinal tract, in the drug's distribution within the body, and in rates of biotransformation account for some of this variation.⁹ For the most part, however, the wide dose range reflects unpredictable interindividual variations in sensitivity to drug effects. Treating all patients with the same arbitrary dosage schedule is not rational. Dosage must be carefully adjusted according to the needs of each individual patient.

Although they are not anxiolytics *per se*, antidepressant drugs, major tranquilizers, and beta-adrenergic antagonists are also discussed in this section because of their possible role in the treatment of neurotic anxiety.

BARBITURATES

Intermediate- and long-acting barbiturates are

BENZODIAZEPINES

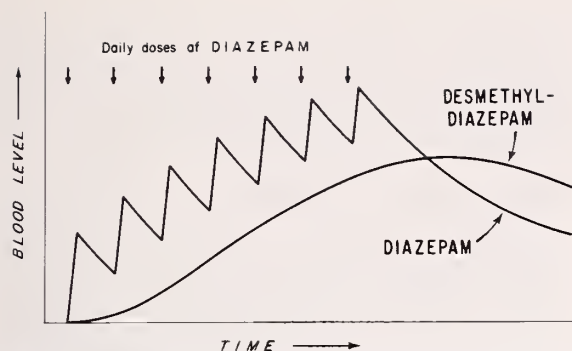


Fig. 1. Blood Concentrations of Diazepam and its Major Metabolite, Desmethyldiazepam, during Repeated Daily Administration of Diazepam (Schematic Diagram).

Chronic therapy with diazepam results in accumulation of diazepam and its pharmacologically active metabolite, desmethyldiazepam. Both drugs persist in the blood for days and even weeks after diazepam is stopped. See Reference 23 for actual data (Reprinted with permission from Raven Press²⁰).

commonly used as antianxiety agents. Barbiturates produce generalized central nervous system depression and have little or no specific effect upon anxiety. As such their anxiolytic efficacy is highly variable and often unsatisfactory.¹⁰ Many patients receiving barbiturates for daytime sedation experience unwanted drowsiness or somnolence.

The hazards and disadvantages of barbiturates used to treat anxiety are the same as when they are given to induce sleep.⁶ Hepatic microsomal enzyme induction produced by therapeutic doses can antagonize the clinical effects of other drugs metabolized by the liver.¹¹ Habituation and addiction can occur with doses only slightly above the therapeutic level.^{12,13} Deep coma and death occur all too often as sequelae of intentional overdosage.¹⁴

The low cost of generically-prescribed barbiturates seldom outweighs these important drawbacks. Their use as anxiolytics is rarely justified.

PROPANEDIOLS

Introduced in 1955, meprobamate was promoted as a "wonder drug" for anxiety. Controlled studies subsequently showed that meprobamate is doubtfully more effective than placebo and certainly no more useful than a barbiturate.¹⁵ Although meprobamate does not cause clinically important enzyme induction in man,^{16,17} it does have a significant addiction potential and can produce serious poisoning when overdoses are taken.¹⁵ Limited reports suggest that tybamate, another more expensive propanediol derivative, may have greater efficacy and less addiction potential than meprobamate.¹⁸ Adequate verification of this is lacking since tybamate is not commonly used.

Meprobamate is usually given in doses of 400 mg four times daily. Since meprobamate's half-life is approximately 11 hours in most subjects,¹⁹ more than twice daily dosage is usually unnecessary.

Although not ideal antianxiety agents, benzodiazepines are the most effective of currently available anxiolytics.^{20,21} Anxiety-reducing doses of benzodiazepines cause unwanted drowsiness less frequently than equivalent doses of barbiturates or meprobamate. Benzodiazepines do not cause enzyme induction, have a low addiction potential, and rarely cause serious poisoning even when very large overdoses are taken. Unfortunately, they are relatively expensive. There is no consistent evidence that any one benzodiazepine derivative is more effective than the others.

Both chlordiazepoxide²² and diazepam²³ are long-acting drugs with pharmacologically active metabolic products.²⁴ Repeated daily dosage of either drug can lead to accumulation of the parent compound, its active metabolites, or both^{23,25,26} (Figure 1). Thus, cumulative clinical effects are possible. Therapeutic and/or toxic effects may not appear until after several days of continuous therapy. The same holds for clorazepate, which is biotransformed to desmethyldiazepam, a long-acting pharmacologically active metabolite identical to the product of diazepam metabolism. Oxazepam, on the other hand, is rapidly biotransformed to an inactive product.²⁷ Accumulation of oxazepam during chronic therapy is relatively unimportant.

Benzodiazepines should be administered in accordance with these pharmacokinetic facts. Chlordiazepoxide, diazepam and clorazepate can be effectively given on a once- or twice-daily basis.²⁸ Two-thirds or more of the daily dose can be administered at bedtime. This is particularly useful for patients with insomnia associated with anxiety; the need for a second hypnotic drug might be obviated. An example of a typical dosage schedule for diazepam is: 10 mg at bedtime and 5 mg at noon. Because oxazepam is relatively short-acting, three or four daily doses of this drug are necessary. Again, a larger evening dose can be used to promote sleep.

ANTIHISTAMINES

Certain antihistamines are used as anxiolytic agents. However, their non-specific central nervous system depressant properties are only secondary pharmacologic effects.²⁹ The use of antihistamines for anxiolytic purposes is no more rational than their use as hypnotics. The efficacy of hydroxyzine as an anxiolytic, for example, is not adequately established; furthermore its use carries the hazard of anticholinergic toxicity particularly in elderly patients. Administration of hydroxyzine may be justifiable in certain patients with anxiety associated with pruritic dermatoses.

ANTIDEPRESSANTS

In patients whose anxiety is expressed in panic attacks, a pattern of travel restriction may result

from their fear of having panic attacks while away from home. Recent evidence suggests that imipramine³⁰⁻³² and monoamine oxidase inhibitors³³⁻³⁵ may be beneficial for phobic-anxious patients with panic attacks. To our knowledge no studies exist which compare benzodiazepines and antidepressants in this subgroup of patients. The Food and Drug Administration (FDA) does not consider the treatment of panic attacks as an approved indication for the use of antidepressants.

MAJOR TRANQUILIZERS

Major tranquilizers or antipsychotic agents (phenothiazines, butyrophenones, thioxanthenes) are promoted by the pharmaceutical industry for the treatment of anxiety in nonpsychotic individuals. These drugs, in fact, are no more effective than benzodiazepines in patients with neurotic anxiety. Furthermore, the side effects of major tranquilizers are much more serious and frequent, and their hazards considerably greater. Treating anxiety in nonpsychotic individuals with major tranquilizers is seldom indicated.

BETA-ADRENERGIC ANTAGONISTS

Many somatic manifestations of anxiety result from excess beta-adrenergic activity. Several studies have demonstrated that propranolol and other beta-blocking drugs are effective anxiolytics in patients with predominantly somatic symptoms such as tachycardia, palpitations, tremulousness and hyperventilation.³⁶⁻⁴¹ Although propranolol has a variety of central nervous system effects,⁴² its anxiolytic efficacy is attributable primarily to its peripheral beta-adrenergic antagonism.

Propranolol produces effective beta blockade in relatively low doses of 30 to 40 mg per day. It is contraindicated in patients with organic heart disease whose cardiac compensation depends upon sympathetic stimulation.^{43,44} It is also contraindicated in patients with asthma or obstructive pulmonary disease, and should be used with caution in patients with diabetes mellitus.^{43,44} Again, the FDA does not consider the treatment of anxiety as an approved indication for the use of propranolol.

COMMENT

Since anxiety is an episodic disorder, drug therapy is most rational when it coincides with exacerbation of symptoms. Dosage can be increased when discomfort is most severe and reduced or eliminated during remission. Intelligent patients with insight into their illness often can make these adjustments by themselves. Both physician and patient should be aware of the necessity to titrate drug dosage and duration of administration according to individual needs.

ACKNOWLEDGEMENTS

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FROM THE SECRETARY'S NOTEBOOK — *Continued from Page 220*

represented Maine at both these meetings. He felt there is an apathy among the members of those two societies, as generally in medicine, and he urged more interest in medical society affairs to our members.

Report of Reference Committees — All printed and oral reports referred to these three committees were approved. Additional recommendations (not listed elsewhere in this summary), as approved by the House of Delegates, are as follows:

Committee on Emergency Medical Services — This report was referred to the *Executive Committee*, with the recommendation that implementation of the guidelines set out be as speedy as possible.

Committee on Continuing Education — Recommended that after the first 6 months of the program (which will be funded by the M.M.A., as approved by the Executive Committee), the Committee go back to the Executive Committee if additional funds are needed.

Committee on Ethics and Discipline — The report was referred to the *Executive Committee*, with the suggestion that bylaws in regard to this committee be reviewed, that exact guidelines for

this Committee be provided to follow to meet legal requirements and protect committee members from suit.

Committee on Care of the Disadvantaged — This report was referred to the newly appointed *Committee on Care of the Disadvantaged* for its approval or its action.

Committee on Computer Utilization in Medical Practice — The committee was commended for its work and encouraged to continue in this work.

Special Memberships — The recommendations for special memberships were approved.

Stenographic Record — A summary of the proceedings of the House of Delegates is being sent to the county presidents, and to the members of the House of Delegates. (The complete report is on file in the Association's office in Brunswick, where it is available to any member of the Association.)

The meeting was adjourned at 4:10 P.M. on Saturday, June 15, and at 5:40 P.M. on Sunday, June 16.

Patricia A. Bergeron
Secretary-Treasurer, M.M.A.

This proposal was seconded and approved by the assembled members.

Dr. Oram R. Lawry, Jr. called the Society's attention to the fact that Drs. William Barnum, Donald Weaver, and Lloyd Roberts have fulfilled the six-month residency requirement prerequisite to membership in the Knox County Medical Society. The Credential Committee, on reviewing their applications, recommended their applications to the Society be acted upon. Dr. William Nuesse proposed that Drs. Weaver, Barnum and Roberts be officially inducted into the Knox County Medical Society. This was seconded by Dr. Williams and approved by majority vote of the assembled members.

Dr. William Nuesse then addressed the Medical Society on present status of the Ambulatory Care Center. Following a discussion, it was moved that the meeting be adjourned. This was seconded and the meeting was adjourned at approximately 10:30 p.m.

DAVID G. REED, M.D., *Secretary*

LINCOLN-SAGADAHOC

A regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on March 19, 1974. The meeting was called to order by the President, Dr. Peter Evans at 8:53 p.m. The minutes of the February meeting were accepted as read by the Secretary.

Old Business: Dr. Evans read replies to Society letters from Senators Muskie and Hathaway and Representative Kyros.

Dr. George W. Bostwick stated that he had talked with State Senator Walter Hitchens, Chairman of the Senate Committee on Health and Institutional Services, who told him that the law changing the status of alcoholism was enacted in 1973 and is now a dead issue. The M.M.A. office was asked to suggest a list of "appropriate legislators" and could find no specific group which could be so designated. Dr. David W. Schall led a discussion of the problems engendered by the change of status. Dr. Paul A. Fichtner moved, and Dr. Richard C. Leck seconded, that last month's motion directing the writing of letters be reconsidered and tabled. Carried.

Dr. Fichtner answered questions of members about the effectiveness of the M.M.A. lobbyist in Augusta. He also discussed physician participation in legislative process and stressed the need for more.

President Evans read a letter from the Maine Heart Association asking for candidates for research associates in hospitals.

The President then introduced the recommendation of the Board of Censors that the application for active membership of Dr. Sunny J. Bullington, 56 Baribeau Drive, Brunswick, be accepted. The motion was seconded by many and unanimously approved. A letter has been received from the Cumberland County Medical Society approving transfer of membership of Drs. Dumdey, Crichton, Stong, Bullington and Bowman.

Dr. Louis Bachrach asked for ideas for the program for Ladies Night in May. He then introduced the School Health Committee, Dr. Robert M. Hassan and Dr. Charles E. Burden, who then read and explained a proposed health program for the public schools. Extensive and searching debate followed each point proposed for Society policy endorsement. Consideration of one item was postponed until the April meeting; the entire program will be decided at that time.

The meeting was adjourned at 10:53 p.m.

GEORGE W. BOSTWICK, M.D., *Secretary*

PENOBSCOT

The monthly meeting of the Penobscot County Medical Society was held on February 19, 1974 at the Pilot's Grill in Bangor, Maine.

The meeting was opened with the scientific portion of the session. Marilyn Bull, M.D. of the New England Center Hospital and the Boston Floating Hospital, Boston, spoke on the topic of Clinical Genetics. She presented a thorough and most interesting

discussion regarding chromosomal and genetic abnormalities and directed a portion of her talk toward genetic counselling. Various examples of chromosomal and genetic abnormalities were described and visual presentations of this material were also presented. Following her formal presentation, a discussion period followed.

The business portion of the meeting was opened by the President, Dr. Dexter J. Clough, 2nd. The minutes of the January meeting were read and approved. Applications for new members were then read and these included the applications of Drs. Richard Patch, Edward David and William Davis. All three applicants were unanimously approved and accepted into membership. Announcement of the transfer of Dr. David Beebe of the Kennebec County Medical Society to the Penobscot County Medical Society was made.

Under communications, a letter from Agnes Flaherty, R.N., President, Maine State Nurses Association to Senator Wakine Tanous, requesting Senator Tanous to withdraw legislative document 2199 was presented for information. In followup discussion of this letter, it was mentioned that this matter was sent back to the State Nurses' Association so that they might resolve their differences and present a new bill for consideration.

Under new business, Dr. Thomas L. Watt brought up the possibility of the formation of a corporation from within the County Society, but not to include the County Society per se, in order to deal with present potential or future actions on the part of State and/or Federal Agencies. A brief discussion then followed which included the likelihood of our future involvement in HMO's, PSRO's and foundations. It was moved, seconded, and passed that the President appoint an ad hoc committee to bring forth recommendations regarding the formation of such a corporation.

Dr. Richard A. Gaillard brought up the topic of a recent article in the Bangor Daily News regarding alcoholism authored by Dr. Elizabeth Levinson, and the fact that a questionnaire was distributed to professional and non-professional personnel of both the Millinocket Community Hospital and the St. Joseph Hospital within the past year. A discussion then followed; however, no definitive action was taken on this matter.

As there was no further business, the meeting was adjourned.

The monthly meeting of the Penobscot County Medical Society was held on March 19, 1974 at the Stable Inn in Brewer, Maine. The minutes of the February meeting were read and approved.

The President, Dr. Dexter J. Clough, 2nd announced that Dr. Thornton W. Merriam, Jr. had submitted a letter of resignation as the representative from Penobscot County to the Health Finance Committee of the Maine Medical Association. The appointment of Dr. Edward J. Hughes, Jr. to replace Dr. Merriam as our representative to that standing committee was then made.

Dr. Richard V. Duffey then presented to the Society the resolution on the death of Dr. Alan Woodcock. Members of the resolution committee included Drs. Duffey, Hall and Hill. Copies of the resolution were forwarded to family members.

An application for membership into the Society from Dr. Robert P. Rosenberg was presented. This application had previously been reviewed by the Executive Council and approved. Dr. Rosenberg's application was then unanimously approved by the full membership.

The scientific portion of the session was devoted to an excellent presentation by Dr. Robert Ritchie, Maine Medical Center, Portland, who spoke on the Clinical Application of Serum Protein Analysis. Dr. Ritchie presented both an historical and up-to-date view of information to be gained through protein analysis. Its clinical application in the daily practice of medicine became quite evident throughout Dr. Ritchie's remarks. Following his presentation, a question and answer session followed.

As there was no further business, the meeting was then adjourned.

PHILIP G. HUNTER, M.D., *Secretary*



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Vulnerability To Infection: What Is It?

RICHARD C. BRITTON, M.D.*

Because mortality due to invasive infection continues to be a serious problem, especially in patients who seem prone to infection or who become so during hospitalization, it is worth reviewing periodically the nature of the problem and how research advances may be used to improve results. Webster's dictionary defines *susceptibility* as lack of ability to resist extraneous agents whereas *vulnerability* is defined as capability of being wounded or damaged. The susceptible patient would be one who has hereditary or congenital deficiencies of normal defenses against infection. The vulnerable patient would be one who develops defense disabilities because of disease, therapy, or methods of care. The practical significance of discoveries in recent years applies to both types of patients. This review, therefore, will look first at new information about normal defense mechanisms, then at factors which affect them, and finally at indicated preventive and therapeutic measures.

Normal Defenses Against Infection. The primary barriers against massive bacterial invasion include physically intact mucous membrane, endothelium, and skin. At a point of focal injury with bacterial contamination, the reaction of bacterial cellular surface antigens with specific or non-specific circulating antibodies provides binding sites for complement in a process called *opsonization*. Chemotactic attraction of leucocytes occurs with phagocytosis and killing of bacteria by leucocytic enzymes which include peroxidases, cathepsins, lysozymes, lipases, proteases, and nucleases which attack bacterial capsules and nuclei. Depending on the nature of the bacterial antigens, re-inforcement of specific antibody production may result.

Hereditary or Congenital Abnormalities. In 1951, Bruton¹ reported the case of an eight year old boy

who had repeated infections associated with hypogammaglobulinemia detected by the newly adapted Tiselius electrophoresis technic. Empirical therapy with monthly injections of pooled gamma globulin has effectively protected him from serious bacterial infection for the subsequent 23 years. Increasingly sophisticated studies have led to identification of numerous sex-linked or autosomal congenital immunological deficiencies related to the failure of production of immune antibodies. Good and others² have further increased our understanding of humoral and cellular immunities in demonstrating the basic differentiation of the stem cell into either *thymic dependent lymphocytes* which mediate cellular response (delayed allergic, homograft rejection, and graft versus host reactions) or into *plasma cells* which mediate humoral responses by the production of specific antibodies (Ig A, Ig G, Ig M, etc.). Bruton's patient had no plasma cells and could not synthesize specific antibodies but was successfully immunized against viruses and BCG. He had absent Ig A, reduced Ig G and Ig M, and no germinal centers in lymph nodes.

Recent research has also identified congenital deficiencies of the complement system which may result in susceptibility to infection by most surgical pathogens which do not provoke a high titer of specific antigen. However, a specific antibody may compensate for the lack of a complete complement cascade. Current research has also identified congenital deficiencies of leucocytic enzymes resulting in impaired bacterial killing effectiveness.

Acquired Impairment of Defenses. Diseases which interfere with the normal rate of production of normal lymphocytes and plasma cells may quantitatively impair the ability to handle bacterial invasion. Multiple myeloma, leukemia, metastatic neoplasm, and uremia are examples of such processes. Cirrhosis of the liver and other diseases which alter normal protein synthesis may predis-

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pose to infection by quantitatively impairing adequate production of immunoproteins. The predisposition to infection seen in patients with terminal cancer and inanition is known clinically but as yet unexplained chemically. Overwhelming invasion as occurs with major burns may exceed the capacity of normal defense mechanisms already depressed by a catabolic state and depressed leucocytic killing power. The latter has been reported to decrease sharply just prior to fatal sepsis in burn patients, in starved patients, and in association with immunosuppressive drugs. Iatrogenic causes secondary to drug therapy include aplastic anemia, radiation, corticosteroid therapy, and drug reactions. Local factors which favor infection because of poor blood supply or stasis include effusions, cystic fibrosis of the pancreas, lymphedema of the extremities, and peripheral vascular occlusive disease.

Predisposition to infection in diabetic patients has long been known but the precise reason for this is still unclear. Earlier conjecture assigned a high concentration of glucose in tissue and plasma as favorable to bacterial growth but numerous studies have negated this hypothesis. The importance of microvascular changes in diabetics, contributing to reduced blood supply, is highlighted by the observation that patients with growth hormone deficiency have the same carbohydrate intolerance, decreased insulin secretion, hypertriglyceridemia, hypercholesterolemia, and hyperglycemia as diabetics but do not have microvascular changes or predisposition to infection or retinopathy. In these patients, it has been suggested that a protective effect against microvascular changes may result from a sub-normal rate of protein synthesis in the absence of growth hormone.

Iatrogenic and Environmental Factors. Depletion or destruction of both plasma cells and thymic dependant lymphocytes by radiation or immunosuppressive drugs, marrow and lymph node suppression by cancer chemotherapy, and depletion of the lymphocyte immunoglobulin pool by corticosteroid therapy have been mentioned. The implantation of foreign bodies such as pacemakers, heart valves and patches, hip prostheses, and artery grafts invites infection through contamination during insertion, as localizing sites during bacteremia, and by invasion along transcutaneous wires or tubes. The development of subacute bacterial endocarditis in heroin addicts who have had cardiac surgery is well documented. The higher incidence of wound infection after splenectomy with drainage than without and the significant incidence of systemic infection with long-term indwelling venous catheters are well known. The high incidence of urinary bladder infection associated with indwelling catheters is accepted as inevitable in most centers.

Colonization of patients by hospital nosocomial organisms occurs with amazing rapidity, as indi-

cated by numerous reports demonstrating a direct relationship between the length of hospital stay prior to operation and clean wound infection rate. Unhappily, the majority of such organisms represent surviving strains of bacteria which are resistant to commonly used antibiotics. Frequently culture recoveries from the blood and airways of septic patients are of bacteria formerly considered harmless saprophytes. The indiscriminate use of prophylactic antibiotics to treat fever of any cause may dislocate the patient's symbiosis with his own organisms and favor invasion by "hospital" pathogens. Especially vulnerable is the special care unit patient with multiple portals of entry through and around central venous catheters, arterial cannulae, bladder catheters, tracheostomies or endotracheal tubes, traction pins, and surgical drains. Under these circumstances, any relaxation in proper dressing and isolation technic may result in disaster.

Preventive and Therapeutic Measures. Although familiar but frequently ignored because of expediency, the basic steps of epidemiological prevention and control are worth repeating. They are essential for the protection of both the susceptible and the vulnerable patient and are as follows:

1. Periodic re-education of both professional and non-professional employees in the essentials of nosocomial bacterial transmission by hands, oropharynx, and feet.
2. *Easy access* to hand washing facilities for all personnel who touch patients.
3. A hospital environment *kept clean* by adequate housekeeping of patient rooms, ward corridors, and floors.
4. Regular bacteriological surveillance of food-handlers and special care unit personnel.
5. Regular bacteriological surveillance of sinks, floors, and contact surfaces in operating rooms, isolation suites, and special care units.
6. Rigid enforcement of isolation and dressing technics including the use of masks, sterile gloves, and gowns.
7. Reduced traffic in sensitive areas to reduce ambient bacterial numbers.
8. Isolation of patients with heavy infestation of known pathogens.

The proper use of prophylactic antibiotics varies with the indication but includes the necessity for administration before the patient is at risk to be effective. For example, administration one or more days before cardiac surgery is necessary to obtain effective tissue levels whereas administration during or after surgery may have little protective effect. The use of prophylactic antibiotics to "cover" patients having cholecystectomy, hernioplasty, gastric surgery, and other "clean" or "clean-contaminated" procedures routinely is questionable and may predispose to more serious infection by resistant or-

Continued on Page 240

The Prevention of Thrombosis

LOUIS G. BOVE, M.D.*

Up to now physicians interested in hemostasis have directed a majority of their efforts towards the prevention and treatment of the various bleeding states. Recently from this same group, using their understanding of the various mechanisms of hemostasis, the anti-coagulant drugs, and the drugs which have been shown to suppress platelet activity, has come forth with information on the prevention of thrombosis. Since this latter subject applies to a much larger group of patients, the information has become what the news media calls "hot-copy." Statements have been made regarding the prevention of thrombo-embolic disease, coronary artery disease, pulmonary embolism, transient ischemic attacks (TIA), etc., which are not accurately based on the data presently available. In some cases, this jump towards the newer concepts has subjected patients to undue and unnecessary risks because the time-tested and proven methods of therapy have been withheld. An example of this would be the use of mini-heparin in the prevention of pulmonary embolus in the hip surgical patient, a form of therapy which in this type of major surgical procedure is far less effective than the conventional use of warfarin anti-coagulant drugs.¹ Another example is the use of aspirin, as suggested by many to prevent coronary thrombosis, a practice which a large number of physicians participate in, but a practice which has as yet no reliable data.

As a physician who has been interested in hemostasis, I have noted a marked increase in the number of consultations requested on the subject of thrombosis prevention. The information is available and it is important that we as practicing physicians make use of this data base to separate fact from fiction. The purpose of this article is to outline briefly the major concepts and therapies in this field, as well as provide the reader with an up-to-date bibliography. The concepts and recommendations made are not original, but are factual.

Prior to any discussion on thrombosis prevention, some comments should be made regarding the term thrombosis and an understanding of its pathogenesis. Thrombosis refers to the formation of a lump or clot within the blood vessel. This lump or clot is made up of blood components. What is important for our discussion is to point out again something which our pathologist colleagues have been saying for a long time — that there are two different types of blood clots. The conventional "red clot" is found

primarily in the venous system, and is made up of a large number of red blood cells caught in a fibrin mesh. This clot is initiated by the stagnation of blood and involves in its genesis the cascade coagulation system.² The second type of clot is a "white clot," which is found in the arterial system and is initiated by platelet aggregation on a damaged endothelial surface. This clot is made up primarily of platelets and fibrin,³ which later may develop a larger red clot, but this is truly after the fact. These two types not only differ in their initiating factors and constituents, but will differ finally in any preventative mechanism. A summary of these differences is listed below.

Type of Clot	Red Clot	White Clot
Location	Venous	Arterial
Initiating Factor	Stagnant Blood Flow	Damaged Endothelium
Thrombogenesis	Cascade Coag. System	Platelet Plug Formation
Components	RBC's in Fibrin Mesh	Platelet-fibrin Clot

DRUGS THAT SUPPRESS PLATELET ACTIVITY

Platelets adhere to sub-endothelial tissue. The adhesion causes the platelet to undergo a release reaction in which the platelet alters its membrane and secretes adenosine diphosphate (ADP) into the extracellular space. ADP is the primary aggregating agent for platelets. The released ADP causes free platelets to adhere to the platelets adhering to the sub-endothelial tissue and each other. In this way a platelet plug is formed and fibrin is deposited at the local site. Platelet function can best be studied by the modified Ivy technique as described by Mielke,⁴ and by platelet aggregation studies.

Drugs which alter platelet function *in vivo* are the non-steroid anti-inflammatory agents and dipyridamole. Belonging to the first group are aspirin, indomethacin, phenylbutazone and sulfinpyrazone. All of these agents produce a partial inhibition of the release reaction such that a second wave of aggregation is not seen with ADP and/or epinephrine.⁵ Aspirin ingestion may result in a significant prolongation (up to 12-15 minutes) of the Ivy bleeding time.⁶ Sulfinpyrazone therapy returns platelet survival to normal in the various clinical states which have been associated with a reduced platelet survival, i.e., rheumatic heart disease with mitral stenosis, substitute heart valves, recurrent venous thrombosis and arterio-venous shunts.^{7,8,9} Dipyridamole does not alter platelet aggregation or increase the bleeding time, but does increase the survival time of platelets in patients with substitute heart valves, and does reduce the incidence of peripheral arterial embolization.¹⁰

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ANTI-COAGULANT THERAPY

Therapy of thrombotic disorders involves the administration of the various anti-thrombotic drugs, or anti-coagulants. These drugs prevent the formation of a fibrin clot and should be distinguished from fibrinolytic drugs, which lyse or resolve a fibrin clot. The anti-coagulant drugs in common use are heparin and the coumarins.

Recent work shows that heparin binds to a plasma gamma-globulin, anti-thrombin III, and strikingly potentiates the inhibition of this protein on blood coagulation Factor Xa and thrombin.¹² The heparin-activated inhibitor may have other sites of action in the clotting cascade as well. Low dose heparin is being suggested for the prophylaxis of thrombo-embolic disease;¹³ the anti-thrombotic dose of heparin used neither prolongs the thrombin clotting time nor produces significant clinical bleeding in the operative wound or elsewhere. The fact that the heparin is initiated prior to surgery may be the key to the prophylactic success. More heparin is required to bring about the blockade of the thrombin-fibrinogen reaction by inhibition than is required to neutralize activated Factor X.¹⁴ Hence, if hypercoagulability is to be treated before intravascular coagulation has occurred, less of the anti-thrombotic agent will be required than if therapy is begun after thrombosis formation has occurred.

Unlike heparin, the therapeutic actions of the coumarins depends on their ability to prolong the prothrombin time by suppressing the formation by the liver of Factors II (prothrombin), VII (proconvertin), IX (Christmas) and X (Stuart-Prower).¹⁵ Because they are effective by oral ingestion they are by far the most commonly used, and unfortunately the most common cause of an acquired bleeding tendency. Dosage must be individualized, a non-loading technique is far safer for the initiation of therapy,^{16,17} and the physician must be aware of the many interactions of the coumarins with other drugs as best described by Koch-Weser and Sellers.¹⁸ The value of these drugs is accepted in the prevention of venous thrombo-embolism, but it is unlikely they have any real benefit in the prevention of arterial thrombi. Despite the many problems which have occurred during their use to the physician who is knowledgeable in their actions, the coumarins are safe to use and easy to monitor by the simple one-stage prothrombin time.

CLINICAL APPLICATIONS

The following table will serve as a reference and point of discussion in the remainder of this article.

The major problem in the surgical patient is the prevention of pulmonary embolism, which is said to be present in 60% of routine autopsies.¹⁹ Numerous factors, i.e., elevations of plasma pro-coagulants, thrombocytosis, increased fibrinogen levels, increased platelet reactivity, venous stasis,²⁰ etc.,

Type of Problem	Sulfinpyrazone, Aspirin- dipyridamole		
	Mini-heparin	Coumarins	
Prevention of venous thrombo-embolism			
Major surgery i.e., hip surgery	0	+	0
Intermediate surgery	+	0	0
Minor surgery	0	0	0
Prevention of arterial thrombi	0	0	+

contribute to the fact that pulmonary embolism is such a common cause of death in the postoperative patient. Anti-coagulation with heparin and the coumarins is the main-stay of therapy once thrombo-embolic disease has occurred, but this may be too late. New techniques, scans of isotope labeled fibrinogen and venograms, have aided in the early detection of venous thrombosis; but for those who do not have these techniques, susceptible patients must be identified and treated prophylactically. The use of elastic stockings, leg elevation and leg exercises are helpful, but this help is modest at best. Possible more elaborate measures such as electrical stimulation of the calf and the thigh would be more helpful in prevention, but these are too cumbersome and impractical for routine use. A wide experience has been accumulated in the use of coumarins in the surgical patient, and operation during anti-coagulant therapy is safe, provided the prothrombin time is not excessively long.²¹ The prothrombin time should not exceed twice the control during the operation or in the immediate postoperative period. The drug may be discontinued once the patient is fully ambulatory. Reports have proven the benefit of prophylactic coumarins in elderly patients with hip fractures,²² in patients undergoing gynecologic and other pelvic procedures,²³ in patients undergoing major orthopedic procedures,²² and in high-risk general surgical patients in whom a ten-fold reduction in incidence has been achieved.²⁴ Despite these reports, the use of coumarins has not been popular or gained any real acceptance with surgeons.

With the initial reports by Sharnoff in 1966 that low dose heparin therapy was beneficial in the prevention of venous thrombo-embolic disease,²⁴ there has been a wide acceptance of this practice.²⁵ The schedule varies, but that most often used is a loading dose of 5000 U given two hours before the operation, followed by 5000 U every eight to twelve hours until the patient is fully ambulatory. The rationale for this program was described earlier. For all of its attractiveness, this is not the panacea for thrombo-embolic disease. It is less effective than oral anti-coagulants in certain high-risk patients, namely in patients undergoing prostatectomy,²⁶ in patients with fractured hips,¹ in those undergoing reconstruction of the hip,¹ and in patients with myocardial

infarctions.²⁷ Heparin in this low dose schedule should be recommended for patients at moderate risk only. As a final statement regarding the prophylactic use of coumarins, 3000 reconstructive operations of the hip have been done at the Massachusetts General Hospital without a fatal pulmonary embolism using warfarin prophylactically.²¹

Unfortunately to date there is no large experience with the agents which inhibit platelet function, and there is need of more data before general acceptance can be recommended. There are three regimens which have promise. These are: sulfinpyrazone (Anturane®) 200 mgs. q.i.d., dipyridamole (Persantine®) 100 mgs. q.i.d. and dipyridamole 100 mgs. q.i.d. and aspirin. It is my experience that patients cannot take 100 mgs. of dipyridamole q.i.d. without unacceptable side effects, particularly, weakness, flushing, abdominal cramps and diarrhea. There is no experience with aspirin alone, although several groups are now involved in such studies. It appears that sulfinpyrazone 200 mgs. q.i.d. is the current regimen of choice. The latter regimen is recommended in the therapy of TIA, in which it is now accepted that the etiology is secondary to micro-emboli made up of platelets and fibrin dislodged from irregular plaques. The enthusiasm for oral anti-coagulants in TIA is waning, and it has not been as effective as initially hoped. There are no large studies regarding coronary artery disease and I am not sure a physician is using his best judgment when he recommends the indiscriminate use of aspirin in these patients. As for the patient with certain specific problems relating to arterial thrombosis such as substitute heart valves, arteriovenous shunts, and peripheral arterial embolization, sulfinpyrazone is recommended.^{7,8,9} Sulfinpyrazone is an analog of phenylbutazone and is a potent uricosuric agent. This drug does cause reactivation of peptic ulcer disease, but has shown no problems with bone marrow toxicity or tendency to cause blood dyscrasias. This drug does potentiate the hypoglycemic effects of the sulfonamide agents. Hence, although data is not yet available in arterial thrombosis, the prospects look brighter than ever before.

CONCLUSIONS

The current state of thrombosis prevention was reviewed with particular emphasis towards the type of thrombosis, arterial or venous. A current bibliography is supplied, and therapy was reviewed with attention towards the use of heparin, the coumarins and drugs with antiplatelet activity.

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Pulmonary Sarcoidosis Complicated by Cryptococcosis and Coccidioidomycosis*

The Changing Spectrum of Fungus Disease in Maine

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The definitive diagnosis of sarcoidosis in a patient with evidence of pulmonary infiltration requires careful exclusion of a number of disease entities including tuberculosis, fungus infection,¹ occult carcinoma, occupational lung diseases, Whipple's disease, regional ileitis, and occasionally isolated virus infection (Table 1). Precise diagnosis in sarcoidosis is hampered because these patients have a cell-mediated immune defect rendering them anergic to skin tests for tuberculosis and fungus disease. In the absence of a positive tissue diagnosis or a culture demonstrating the presence of fungus, one may misdiagnose a case of "progressive sarcoidosis" and miss an underlying treatable infection.

Serological testing is now the keystone of early diagnosis of fungus disease. Complement fixation tests and agar gel diffusion tests for the identification of fungal infection make rapid diagnosis possible, properly done and interpreted. These tests are of particular importance in sarcoidosis because being anergic, with a cell-mediated tissue immune defect, serum, cerebral spinal fluid, and pleural fluid serology specific for fungus infections may be the only way in which diagnosis can be made.

In 1972 and 1973, two patients presented at the Maine Medical Center with clinical, roentgenographic, and tissue evidence of "sarcoidosis." In the first, the diagnosis was made by lymph node biopsy ten years before his death from coccidioidomycosis. In the second, a lung biopsy showed "non-caseating granuloma consistent with sarcoidosis" five months prior to death from central nervous system cryptococcosis. Just prior to death in each patient, complement fixation titers were obtained for the lethal fungus. In both patients, substantially elevated titers were obtained. Unfortunately, both patients died before therapy could be started.

This paper has three main objectives: 1] to underscore the difference between the sarcoid reaction

and the disease "sarcoidosis"; 2] to urge rigorous investigation of any patient with a sarcoid reaction to exclude tuberculosis, atypical *Mycobacteria*, fungal infection, underlying lymphoma, or leukemia; and 3] to urge *serial* serologic testing of patients with sarcoidosis because of the increased susceptibility of these patients to superinfection with these agents.

CASE REPORT #1 (D. T.)

Sarcoidosis and coccidioidomycosis

A 43-year-old physician was admitted for the last time to the Maine Medical Center on August 18, 1972, complaining of chills, fever of 104°, headache, and malaise. His present illness began in 1956, 16 years previous, when, as a medical student, he developed cough, fatigue, and malaise. A chest x-ray showed mediastinal adenopathy together with large paratracheal nodes. A tentative diagnosis of sarcoidosis was made.

In 1958, during a follow-up visit, his bilateral hilar adenopathy had progressed and an infiltrative lung lesion was present. A scalene node biopsy showed "lymph nodes showing multiple non-caseating granuloma consistent with Boeck's sarcoid." At that time, his tuberculin test was negative but his histoplasmin test was positive. A previous histoplasmin skin test was negative in 1958, and as he had lived in an endemic area for histoplasmosis he was thought to have complicating histoplasmosis. His hemoglobin was 12 grams, white count was 7,200. A complement fixation titer of 1:64 to the yeast phase antigen of histoplasmosis was obtained. The mycelial antigen titer was zero. There was no reaction for blastomycosis or coccidioidomycosis. The diagnosis of *probable* pulmonary histoplasmosis was made on the basis of his progressive chest x-ray, a positive skin test, and a positive fungus serology.

He felt well and started medical practice in Arizona in 1961, where he and his daughter contracted valley fever. Both were ill for several weeks with chills, fever, and malaise. His chest x-ray showed early diffuse pulmonary fibrosis with numerous pulmonary infiltrates, more severe than demonstrated earlier. This acute illness passed spontaneously, but he continued to be short of breath.

In September 1967, ten years after his original diagnosis of sarcoidosis, his chest x-ray remained abnormal. He underwent a second scalene node biopsy which showed "tuberculoid formation of the scalene node and posterior cervical nodes consistent with sarcoidosis." Despite progressive pulmonary fibrosis by x-ray, however, lung volumes, flow rates, and steady state carbon monoxide diffusing capacity were within normal limits.

In 1971, while in practice in Maine, his shortness of breath increased gradually. He was seen in consultation by the Chest Service of the University of Michigan. His chest x-ray showed diffuse, far-advanced pulmonary fibrosis. His hemoglobin was 11.0 grams, sedimentation rate 10 mm/hr., complement fixation titers for coccidioidomycosis were negative, numerous sputum smears and cultures were examined by an expert mycologist and deemed negative. Presumptive diagnosis of progressive sarcoidosis was made and he was started on corticosteroid therapy.

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TABLE I

AN APPROPRIATE WORKUP OF A PATIENT WITH A "SARCOID REACTION"

History	Physical examination	Laboratory	Specific tests for fungus
Residence or travel in appropriate geographic areas for coccidioidomycosis and histoplasmosis	Telangiectasia, fungus lesions, uveitis Superior vena cava obstruction	CBC for eosinophils or anemia ECG to rule out heart block Sedimentation rate	Complement fixation tests for histoplasmosis, blastomycosis, coccidioidomycosis and paracoccidioidomycosis
Previous history of extra-thoracic tumor	Lymphadenopathy	Sputum culture and sensitivity, fungus stains and cultures, smear for eosinophils (seen in aspergillosis and sarcoidosis)	Agar gel test for histoplasmosis, blastomycosis, coccidioidomycosis, aspergillosis (niger and fumigatus)
History of tuberculosis	Arthritis		Candidiasis and para-coccidioidomycosis
Hydatid disease	Hepatosplenomegaly		
History of arthritis or sinus disease (Wegeners)	Palpable rectal shelf (metastatic malignancy) Search for old chest x-rays	Intermediate PPD for tuberculosis, Battey type B atypical mycobacteria, <i>Candida albicans</i> (to test for anergy)	Indirect fluorescent antibody test for Cryptococcosis
		Detection of anergy: skin window	Tube agglutination test for Cryptococcosis, sporotrichosis
			Smear and culture for tuberculosis

A history was obtained from his mother that he had a positive tuberculin as a child, and he was started on isoniazid, 300 mg. daily.

In August of 1971, he suddenly went into shock and vomited blood. He was admitted to the hospital in Ann Arbor, Michigan. He was found to have hemorrhagic gastritis and probable peptic ulceration, decreased adrenal reserve as a result of steroid therapy, progressive scarring of both lung fields, and involvement of the lung and airway with a necrotizing *Pseudomonas aeruginosa* infection.

One sputum culture was positive for *mycobacterium Kansalii* sensitive to isoniazid. Several sputum smears and cultures were negative for fungus or other acid-fast organisms.

Treatment for infection, shock, and gastrointestinal bleeding was initiated with blood replacement, corticosteroids, gentamicin, and colistin. He made a slow recovery. At discharge, he was weak and short of breath. He was transferred to the Veterans Administration Hospital in Boston, Massachusetts, where additional studies for fungus were carried out. In addition, to exclude the possibility of sarcoid involvement of the pituitary, a vasopressin stimulation and corticotropin stimulation tests were done and both were normal. With normal adrenal function demonstrated, then, his corticosteroid was carefully tapered over the next two months.

In March of 1972, he was seen in the pulmonary function laboratory at the Maine Medical Center. At that time, his chest x-ray had changed and showed a dense unilateral pulmonary infiltrate and ring-like shadows, either cavities or air cysts in the right and left upper lobes. His hemoglobin was 12 gms., white count 9,800, sedimentation rate 31 mm/hr. Sputum examinations showed *Pseudomonas aeruginosa*, *Staphylococcus aureus*, but no evidence of acid-fast bacilli on culture or smear, and no evidence of any fungal forms were demonstrated. His pulmonary function tests were compared to those of 1971. A severe restrictive pattern with a decrease in vital capacity, maximum expiratory airflow rate had developed but arterial blood gasses remained normal. He was maintained in IPPB, chest physiotherapy, intermittent courses of ampicillin, cephalosporin, and Garamycin.[®]

During the interval from March until August, 1972, the patient began prednisone 20 mg. a day on his own, continuing isoniazid 300 mg. daily. On August 18, 1972, he was admitted confused, somnolent, combative, and psychotic. On physical examination, his blood pressure was 100/80, pulse was 100, temperature was

101°. He was pale and had edema about the face and trunk, his fundi normal. His neck was supple, neck veins were distended to the angle of the jaw in the supine position and at 45°. His lungs were filled with diffuse crepitant rales throughout inspiration. Heart sounds were very distant and of poor quality. An S-3 gallop sound was heard in the epigastrium and along the left sternal border. The abdomen was soft and the liver and spleen were not enlarged. His extremities were cool and damp and there were cyanotic nail beds and early clubbing. Although the patient was oriented to place and person, he would at nighttime become very combative and agitated. His chest x-rays had changed little from the films of March 1972. There were, however, increased cystic changes in the middle lung field and an enlargement of the heart. His hemoglobin was 9.2 mg. percent with a hypochromic anemia, white count was 7,600 with 86 polymorphonuclears, 11 lymphocytes, 2 monocytes, and 1 eosinophil. Electrocardiogram showed a sinus rhythm with marked leftward shift of the major QRS axis. Calcium, phosphorus, BUN, uric acid, total bilirubin, alkaline phosphatase, LDH, SGOT were normal. His serum albumin was 3.0 mg. percent. A repeat second strength tuberculin test was negative. A candida and mumps skin test were negative. Electrolytes: sodium 123 mEq., potassium 4.5 mEq., chloride 90 mEq., Co₂ content 24 mEq.; urinary sodium 5 mEq., and potassium 30 mEq. in 24 hours. Serum creatinine 0.8 mg. percent. Numerous blood cultures were negative. His sputum showed large numbers of white blood cells with rare gram positive organisms but no evidence of fungal forms, and again his sputum cultures showed only *Pseudomonas aeruginosa* and *Staphylococcus aureus*, and, later, *Candida albicans*. Several lumbar punctures were performed because of the possibility of bacterial or fungal meningitis. India ink preps and routine examination of the cerebral spinal fluid were negative, performed by several experienced observers. There was no fungal growth in the spinal fluid or in the sputum on culture. The spinal fluid initially showed a protein of 25 mg. percent, and a glucose of 68 mg. percent (blood sugar 110 mg. percent.)

Hospital course: The patient's hospital course was characterized by progressive central nervous system deterioration. Eventually he became obtunded. His lumbar punctures, done every day or two, showed increasing protein to 272 mg. percent and persistent pleocytosis. His respirations became labored and he developed respiratory acidosis. He was intubated and placed on a ventilator and, later, a tracheostomy was performed. Over the next several days he developed a progressive global paralysis

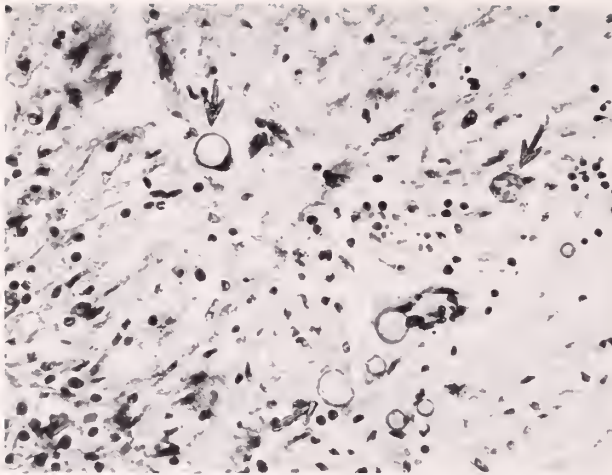


Figure 1. (magnification 90X) Section of lung from patient D. T. showing *Coccidioides immitis* spores. The specimen of lung showed budding spherules of *Coccidioides immitis*. Just to the left of center is a sporulating organism. Until 1955, only one patient with sarcoidosis had developed disseminated coccidioidomycosis.¹ With increased travel, endemic areas are cropping up all over the United States.

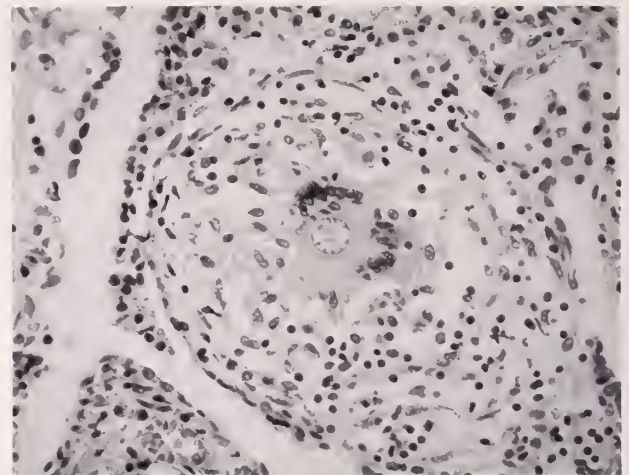


Figure 2. (magnification 90X) Section of lung from patient D. T. showing a classic "sarcoid granuloma" in the center of which is a non-caseating giant cell and in the center of this is a coccidioidomycosis organism.

and eventual decorticate rigidity. On September 2, 1972, spontaneous electroencephalographic activity had ceased and the patient expired.

Clinical diagnosis at the time of death: 1) Meningoencephalitis etiology obscure, question central nervous system sarcoidosis with cor pulmonale; 2) superinfection of the lungs with *Pseudomonas aeruginosa* and *Staphylococcus aureus*; 3) limited adrenal reserve.

Postmortem findings: The significant postmortem findings were in the lungs (Figures 1 and 2). Sections of the lungs showed areas of fibrosis, scarring, and large emphysematous blebs and bullae in the scarred area with abscesses and necrosis and massive polymorphonuclear leukocyte infiltration. In other areas there were granulomatous changes, some with areas of central necrosis and some with epithelioid giant cells without necrosis. On careful examination and appropriate staining, the lung was found to contain the sporulating spherules of coccidioidomycosis (Figures 1 and 2). The head was not examined at the family's request.

Final diagnosis: Pulmonary sarcoidosis complicated by pulmonary infection with *Coccidioides immitis*.

On November 21, 1972, notification was obtained from the Communicable Disease Center in Atlanta, Georgia, of an elevated serum and cerebrospinal fluid titer of 1:128 for coccidioidomycosis.

CASE REPORT #2 (E. G.)

A 52-year-old woman was admitted to the Maine Medical Center on April 28, 1973, because of fever, nausea, and vomiting.

She had been admitted previously in November 1972, with a tentative diagnosis of metastatic carcinoma involving both lungs. This diagnosis was based on the findings of infiltrates in both lung fields and a previous diagnosis of cervix carcinoma in situ in 1961. Because the physicians caring for her were unsure of the diagnosis, however, an open-lung biopsy was performed on October 27, 1972, and specimens of the lung, diaphragm, and pleura and pericardium areas were obtained. The pathological report showed "non-caseating granulomatous disease compatible with sarcoidosis." She was re-evaluated relevant to that diagnosis and no other associated symptoms were involved so it was decided not to treat the patient initially, but to watch her and hope that her illness would wane quickly.

Two months after discharge, in December of 1972, she was feeling poorly, had a low-grade temperature, and her chest x-ray showed progressive densities in the lungs. For this reason, prednisone in a dose of 15 mg. was begun, and over the next four weeks there was a dramatic improvement in her symptoms as well as findings on her x-ray.

In April 1973, she was admitted once again because of gastroenteritis with fever, nausea, vomiting, and abdominal cramps. In the absence of other possibilities, it was felt that this was due to her corticosteroid therapy, and she was switched from small doses parenterally to rather moderate doses by mouth, and her fever subsided. During that admission, her chest x-ray was normal except for a left lower lobe resolving pneumonitis.

On June 15, 1973, she developed fever, chills, lethargy, back pain, and was once again re-admitted for evaluation.

On physical examination, she was a well-developed female appearing her stated age, with typical cushingoid features of a swollen face, virilism, and hoarseness. Vital signs on admission: blood pressure 114/60, pulse 92, temperature 101°. Her pupils were reactive to light and her fundi were normal. Neck was supple and there were no obviously enlarged nodes. Her lungs were clear and heart was not enlarged. There were no murmurs. Abdomen was benign, there was no hepatosplenomegaly. The extremities showed evidence of weight gain and there were superficial varicosities and mild degenerative joint disease. Her neurologic examination was considered to be within normal limits.

The admission impression was recurrent fever, the exact etiology was unknown; progressive sarcoidosis; and cushingoid signs secondary to steroid therapy.

Her chest x-ray, when compared with that of June 29, 1973, showed cystic changes at the left base. Her white blood count was 8,300, with 70 polymorphonuclears, 8 stab forms, 20 lymphs, and 2 monocytes. Hematocrit was 37%, and her sedimentation rate was 52 mm/hr. Her platelet count was 223,000/mm. Her reticulocyte count was 1.9 percent. Urinalysis showed 3-5 white blood cells per high-power field. Electrocardiogram was normal. Her serum calcium, phosphorus, BUN, glucose, cholesterol, total protein, SGOT, LDH, and alkaline phosphatase were normal. During the course in the hospital, she had an increasing personality change with loss of memory for recent events, staggering gait, and slurred speech. She was seen by a neurologic consultant. Her lumbar punctures showed clear colorless fluid with 75 lymphocytes, protein of 189 mg. percent, and negative bacteriologic culture. India ink preparations done three times

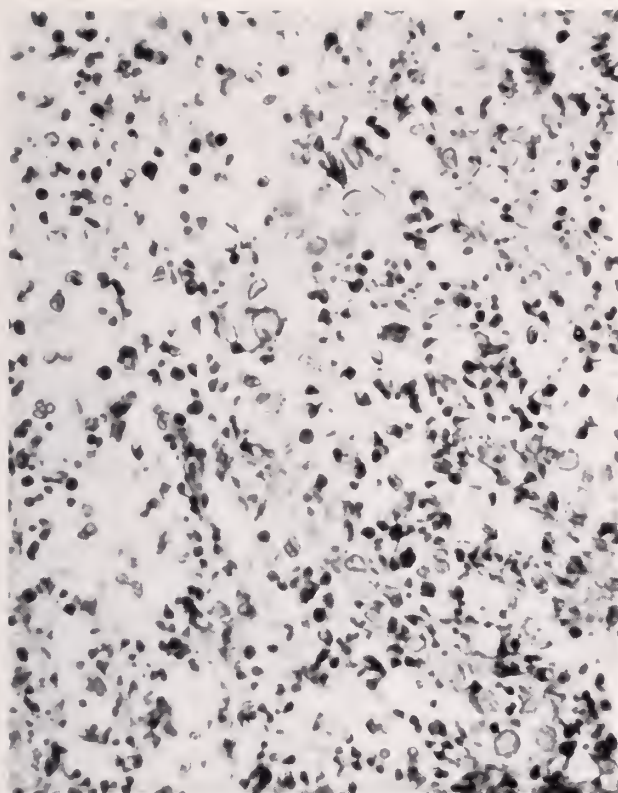


Figure 3. The tiny teardrop-shaped organisms of *Cryptococcus neoformans* are seen infiltrating the meninges associated with an intense cellular response. The organisms are difficult to see (one has been indicated by the arrow). The spinal fluid India ink prep on this patient was repeatedly negative prior to death.

were negative. Her electroencephalogram was diffusely abnormal with no lateralization. Her hospital course was a stormy one characterized by gastrointestinal bleeding, persistent fever, and she was treated with cephalosporin, Garamycin, intravenous fluids, high dose corticosteroids. An angiogram just prior to death showed massive symmetrical ventricular dilatation and internal hydrocephalus. On August 3, 1973, the patient became apneic and unresponsive. On November 2, a complement fixation test of the cerebrospinal fluid was positive on titer of 1:8.

Clinical diagnosis: Sarcoidosis with chronic meningitis, etiology obscure, question of central nervous system sarcoidosis with internal hydrocephalus.

Postmortem examination: The significant postmortem features were found in the meninges and brain where a creamy white material was scraped from the meninges overlying the medulla. There was a diffuse meningitis (Figure 3) with the organisms of *Cryptococcus neoformans* present in the brain. They were also demonstrated in the skin. The lungs (Figure 4) showed evidence of sarcoidosis. The anatomical diagnoses: cryptococcal meningitis, cerebral edema, hydrocephalus, sarcoidosis involving the lungs.

DISCUSSION

There is an increasing awareness that patients who have a diagnosis of "sarcoidosis" may have an underlying treatable disease provoking the sarcoid reaction, or superinfection by treatable organisms. The key to the diagnosis is early, reliable serological testing and serial testing once treatment is initiated. Both of the patients presented in this paper had a

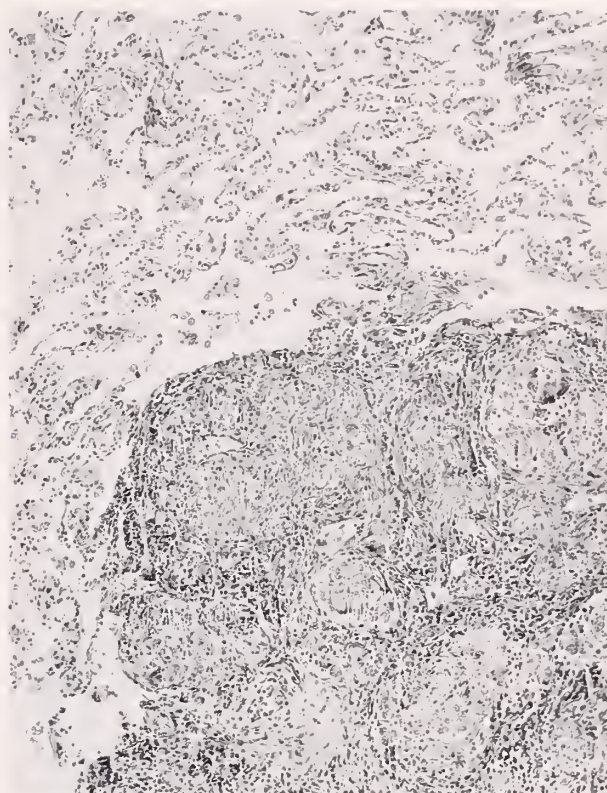


Figure 4. The lung of patient E. G. showing a "sarcoid granuloma" at death. The central nervous system was invaded with cryptococcus when the lung tissue showed no evidence of the organism.

tissue diagnosis of sarcoidosis, and both patients died of fungus disease. In the first, the patient had coccidioidomycosis which was very active and invasive. In the second case, the patient died of *Cryptococcal meningitis* and obstructive internal hydrocephalus.

What is the relationship of sarcoidosis to the development of cryptococcosis and coccidioidomycosis? Firstly, these two cases underscore again the axiom that sarcoidosis is a diagnostic challenge and that patients should be continuously examined for primary and secondary superinfection with mycobacteria and fungi (Table 1).

Coccidioidomycosis is primarily a self-limited pulmonary disease caused by the fungus *Coccidioides immitis*. It uncommonly progresses to a potentially fatal disseminated form. The fungus exists in sharply demarcated areas in the southeastern United States, northern Mexico, and in the Grand Chaco region of South America where the disease is endemic. Rare documented cases have been caused by fomite transmission.

Patient D. T. undoubtedly had coccidioidal meningitis; although the organisms were never identified, the cerebrospinal fluid titer was 1:128. Coccidioidal meningitis often presents as a psychiatric illness. Less than half of the patients

have prior history of non-meningitic coccidioidomycosis and the coccidioidin skin test is invariably negative. The spinal fluid usually shows pleocytosis and increasing protein and decreasing sugar. The key to the diagnosis of central nervous system coccidioidomycosis is the complement fixation titer for that fungus.

Coccidioidal meningitis has been successfully treated with amphotericin B given intra-cisternally, intrathecally, and parenterally at intervals of three to seven days. Intrathecal and cisternal therapy does not replace the initial intensive use of the drug intravenously and intraspinally; however, the systemic effects from amphotericin can be reduced by using the intrathecal route.

Recently, patients with disseminated coccidioidomycosis and other fungus infections who have not responded to amphotericin B have been treated with transfer factor.³ Transfer factor is an RNA-like polypeptide conjugate with a molecular weight of 10,000, which can be easily isolated from the blood of normal donors. This material increases host defenses and reverses in part the immunosuppressed state in patients with sarcoidosis and other situations of immunosuppression. Transfer factor has been used successfully in the treatment of chronic mucocutaneous candidiasis, disseminated coccidioidomycosis, and disseminated cryptococcus. Immunologic reconstitution of the patients with evidence of cell-mediated immune defect was achieved within eight hours after the administration of transfer factor.

Sarcoidosis and cryptococcus: Torula histolytica, also known as *Cryptococcus neoformans*, is a saprophyte on the skin and mucous membrane of men and animals. On culture, it produces an abundant mucoid capsular material which is characteristic. The organism was first described in 1916 and given its name by Stoddard and Cutler.⁴ *Torula* gains entry to the body through the respiratory tract and thence infects the lungs, bones, and central nervous system.

Patient E. G. had central nervous system infec-

tion with cryptococcus causing internal hydrocephalus and death. Again, there was no evidence of the organisms in the cerebrospinal fluid on several India ink preps done by neurologists and pathologists familiar with the "lymphocyte-like" appearance of this organism and the refractile capsule which it demonstrates. As in the previous case of coccidioidomycosis, the diagnosis was suggested by the elevated complement fixation titer to cryptococcus in the cerebrospinal fluid. Her case is the sixteenth reported case of cryptococcosis complicating sarcoidosis.⁵

In addition to amphotericin B, recently two patients have been treated for systemic cryptococcosis with five flucytosine. This agent is useful in those patients who fail to respond to amphotericin B.

These two cases emphasize the need for rapid, reliable serologic testing of patients suspected of having fungus disease. With the increased numbers of patients on immunosuppressive agents for cancer, and with a growing population of patients in the renal transplant program, and with an expanding neonatology service at the Maine Medical Center, we can anticipate that more and more of our patient population will be infected by fungi.

ACKNOWLEDGEMENT

The author wishes to express his appreciation to Dr. Louis Bove for permission to use Case #2, (E. G.); to Dr. Lenore Haley of the Communicable Disease Center, Mycology Unit, Atlanta, Georgia, for her help in determining the serological data in these patients; and to Dr. Franklin Ferguson and Dr. Joseph Stocks for demonstration of the pathological material.

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VULNERABILITY TO INFECTION: WHAT IS IT? - Continued from Page 232

ganisms unopposed by the patient's usual flora.

Identification of patients who are unusually susceptible or vulnerable to infection because of congenital or acquired deficiencies in anti-bacterial defenses should lead to special measures such as isolation, immune globulin or prophylactic antibiotic therapy, and in special instances such as major burn patients immunization against *pseudo-*

monas aeruginosa. The use of fresh whole blood transfusion is a valuable adjunct in the management of patients with massive sepsis, inanition, depressed leucocytic killing power, and anemia.

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Results of Surgery For Duodenal Ulcer†

A 12-Year Experience

GEORGE F. SAGER, M.D.* and EUGENE W. GRABOWSKI, M.D.**

There are many current reports regarding the surgical treatment of peptic ulcer disease. Many of these originate from university hospitals with large numbers of patients and surgeons. We felt that it would be interesting to study the treatment of duodenal ulcer disease by a group of community hospital surgeons with a well-known and well-defined philosophy of treatment with regard to this disease.

Patients were identified by obtaining a retrospective analysis of all vagotomies and concurrent procedures done during the twelve-year period from 1960 to 1971 inclusive in the office of Drs. Sager, Ray, McAfee and Dillihunt. The year 1971 was selected as the termination date of the study to allow at least a two-year follow-up.

MATERIAL

A total of 161 patients were studied as listed in Table 1. All procedures recorded were performed in the standard manner including the procedure of anterior and posterior Heineke-Mikulicz pyloroplasty as reported by Hines.¹ Seven patients were removed from the study for reasons listed in Table 2 leaving 154 cases for analysis. As can be seen in Table 2 only cases which did not have a reasonably well-defined diagnosis of primary duodenal ulcer disease were excluded from the study.

Of the remaining cases for study, it is interesting to note that a preponderance of vagotomy and drainage procedures were performed with a gastric resection rate of only 29%. This reflects the popular preference in this hospital for a more conservative surgical approach to this disease. Twenty-six of 154 patients, or 17% were operated upon on an emergency basis for massive hemorrhage. The hospital mortality was 0. One patient died one day following discharge of myocardial infarction and another died several weeks later of recurrent massive upper gastrointestinal hemorrhage from an unsuspected aorto-duodenal fistula.

Vagotomy and gastroenterostomy was performed, usually not as a purely elective type of operation for duodenal ulcer disease but in patients in an older age group with an average age of 72 years and in whom it was felt that a simple short operation

TABLE 1

OUT OF STUDY	
Vag. + Radical subtotal	1
Vag. for marginal ulcer (prev. subtotal)	3
Vag. + resection for marginal ulcer (prev. PGE)	1
Vag. + Hiatal hernia repair (prev. subtotal)	1
Vag. + Hemigastrectomy for carcinoma	1
Total	7

TABLE 2

MATERIAL	
All Vagotomies 1960 thru 1971 (12 yrs.)	
From the office of Drs. Lape, Sager, Ray, McAfee, Dillihunt	
Vagotomy + Hemigastrectomy — Billroth I	8
Vagotomy + Hemigastrectomy — Billroth II	36
Vagotomy + Heineke-Mikulicz	66
Vagotomy + Heineke-Mikulicz Ant. and Post.	8
Vagotomy + Finney	15
Vagotomy + Jaboulay	11
Vagotomy + Gastroenterostomy	10
Out of study	7
Total	161

TABLE 3

REASONS FOR GASTROENTEROSTOMY	
2 Postbulbar ulcer	76 yrs., 75 yrs.
2 Perf. ulcer with patch	67 yrs., 68 yrs.
3 Bleed and obstruction	81 yrs., 70 yrs., 58 yrs.
1 Obesity and angina	63 yrs.
1 D.U.	80 yrs.
1 Gastric ulcer	72 yrs.
Average age	72 yrs.

was optimal to assure quick recovery and survival. Table 3 lists these patients with their ages and reasons for surgery.

IN-HOSPITAL COURSE

The immediate postoperative problem of gastric stasis defined as identifiable gastric motility disturbance lasting longer than five days is listed in Table 4. In this series, more gastric stasis seem to occur following Finney and Jaboulay pyloroplasties possibly because of the previously reported theory that gastric motility may be disrupted because of the large incision made in the duodenum and relatively long suture line in this area. All other suture procedures including Heineke-Mikulicz pyloroplasties, gastroenterostomies and a small number of patients with hemigastrectomies and either Billroth I or Billroth II anastomoses had relatively good results in

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TABLE 4

STASIS — MORE THAN 5 DAYS		
V + Hemi B I	1/8 — 13%	(Probably emotional)
V + Hemi B II	2/36 — 5.5%	(1 for 28 da.; 1 mild few weeks)
V + HM	4/66 — 6.7%	(7-14 days)
V + HM ant. & post.	0/8 — 0%	
V + Finney	2/15 — 14%	(10, 21 days)
V + Jaboulay	1/11 — 9%	(14 days)
V + GE	1/10 — 10%	(21 days)

TABLE 5

POSTOPERATIVE HOSPITALIZATION (AVERAGE DAYS)	
V + Hemi B I	13.2 days
V + Hemi B II	13.8
V + HM	11.2
V + HM (ant. and post.)	10.3
V + Finney	15 (11.4 omitting one halothane liver failure)
V + Jaboulay	11.7
V + GE	14.6

this regard. One patient with prolonged gastric stasis after Billroth I anastomosis was eliminated because it was felt that after extensive study it was due to a severe emotional disturbance ultimately requiring definitive psychiatric treatment.

The average number of postoperative hospitalization days for each procedure reveals that there is generally a two- to three-day longer hospital stay after resection procedures and these figures are demonstrated in Table 5.

LONG-TERM FOLLOW-UP

One hundred and thirty-five patients were followed for a time span varying between three and thirteen years with nineteen patients lost to follow-up. These patients were analyzed from office records, telephone calls and standardized questionnaires which were mailed to all patients in the study.

When patients were asked about their relative degree of satisfaction with the operation and its effectiveness in relieving the symptoms, the Billroth I anastomosis following gastrectomy resulted in a significantly less appreciative patient population. The reason for doing Billroth I procedures in view of the greater operative risk and difficulty has been given as yielding greater patient satisfaction and less side effects. It is important to note, however, that the number of patients in this group is somewhat small as it is in the anterior and posterior Heineke-Mikulicz group and that one dissatisfied patient can upset the percentages significantly. Table 6 shows other procedures to be about equal in this type of evaluation.

A more objective and standardized method of judging results in this type of study is listed in Table 7 in which patients were divided into four groups. Patients judged as having excellent results were

TABLE 6

PATIENT SATISFACTION WITH OPERATION	
V + Hemi B I	72%
V + Hemi B II	88
V + HM	87
V + HM ant. and post.	75
V + Finney	92
V + Jaboulay	91
V + GE	89

TABLE 7

RESULTS				
	E	G	F	P
V + Hemi B I	37.5%	12.5%	37.5%	12.5%
V + Hemi B II	61	21	15	3
V + HM	66	7.5	13	17
V + HM ant. & post.	63	12	25	0
V + Finney	77	15	0	8
V + Jaboulay	64	9	18	9
V + GE	67	0	33	0

Excellent = Free of all upper G.I. sx

Good = Greatly improved — take no medication

Fair = Improved but take some medication

Poor = No improvement, worse, recurrent ulcer, reoperation

free of all upper gastrointestinal symptoms. Those with good results were greatly improved and took no medication but still had minor complaints. Those with fair results were improved but still required some medication. Those with poor results had either no improvement, were worse, had a recurrent ulcer or required another operation for the same disease. This type of analysis of the results is one which has been used in many recent studies in the treatment of peptic ulcer disease. Again the patients in the group who had the resection and Billroth I anastomosis seem to do the least well but again the numbers in this group were quite small and it is difficult to draw any definite conclusions on this matter for this reason. Other procedures studied seem to have quite similar results.

Many surgeons have disregarded the problem of diarrhea as a significant symptom following surgery for peptic ulcer disease. Recent reports indicate a resurgence of interest in analyzing this postoperative symptom. Certainly after talking with many of our patients, it becomes evident that while diarrhea is not an incapacitating postoperative problem it does bring about a significant change in bowel habits often requiring considerable social adjustment. Diarrhea was defined in this study as any change in bowel habits tending toward increased frequency or increased liquid content of stool. As noted in Table 8, there is little difference in the type of drainage procedure but a surprisingly overall incidence of change in bowel habits.

The dumping syndrome consisting of sweating, hot flashes or weakness after eating was also studied and all procedures which include vagotomy do have significant incidence of this postoperative compli-

TABLE 8

DIARRHEA			
	<i>yes but no problem</i>	<i>yes - a problem</i>	<i>Total</i>
V + Hemi B I	38%	25%	63%
V + Hemi B II	27	15	42
V + HM	17	5.8	23
V + HM ant. and post.	25	12	37
V + Finney	38	7.7	45
V + Jaboulay	36	18	54
V + GE	0	0	0

cation. Despite the fact that the Billroth I anastomosis is advertised as one in which this problem might be less, in our study this did not appear true as noted in Table 9.

In comparing the postoperative problem of weight loss, it became evident that the drainage procedures generally gave better results, with one-third of the patients losing a significant amount of weight as compared to one-half to two-thirds of patients having gastric resections.

POSTBULBAR ULCER

The recurrence rate of peptic ulcer disease following gastric resection and Billroth II anastomosis seem to be significantly lower than with other procedures — as might be expected. However, we found that our recurrence rate for vagotomy and gastric drainage procedures was likewise low, in fact, lower than most reported series with the number generally less than ten percent. We looked at the eight patients in the total series with the diagnosis of postbulbar duodenal ulcer as a separate entity. In analyzing their results, it is obvious to us that this type of presentation for duodenal ulcer disease is quite different from the usual, and as a result warrants other than the usual type of therapy. The recurrence rate of ulcer in patients with this type of

TABLE 9

DUMPING SYNDROME (sweating, hot flashes, weakness after eating)	
V + Hemi B I	38%
V + Hemi B II	27%*
V + HM	21%
V + HM ant. & post.	0
V + Finney	23%
V + Jaboulay	9%
V + GE	11%

*one patient required re-op B II → B I

presentation does appear to be significantly higher and indeed if patients who presented with postbulbar ulcer are eliminated from the list of those people with recurrent ulcer following surgery, it becomes obvious that the recurrence rate of ulcers following vagotomy and any sort of incontinuity drainage procedure approaches zero percent. In other words, if patients with postbulbar ulcers are recognized and are treated with either resection and Billroth II anastomosis or vagotomy and gastroenterostomy (the latter being in the older age group who would not tolerate a resection), the recurrence rate in all groups could be diminished and the criticism of vagotomy and drainage procedures as a definitive therapy for peptic ulcer disease might be much less justified. As long as the patient has the typical pattern of duodenal ulcer not in the postbulbar region, it appears to us that a vagotomy and pyloroplasty might offer the operation with the least morbidity and mortality and a significant minimum risk of ulcer recurrence. We would be interested in seeing further investigation of this latter point in future studies of the surgical therapy of duodenal ulcer disease.

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The Role of the Family Physician in the Diagnosis and Treatment of Cancer

SIDNEY R. BRANSON, M.D.*

During an eighteen month period, the author was involved with seventeen cases of cancer, a considerably higher number than usual for the average family practitioner. In this time span, this unusual number of cases plus the fact that the State of Maine has the highest death rate from cancer per 100,000 population in the country, prompted the author to share his experience and observations relative to this group of cases.

The following list of cases is presented according to sites:

<i>Breast</i>	<i>Lung</i>	<i>Colon</i>	<i>Bone</i>	<i>Nasopharynx</i>
4	2	2	1	1
<i>Kidney</i>	<i>Brain</i>	<i>Leukemia</i>	<i>Stomach</i>	<i>Skin</i>
1	1	1	1	3

The following list shows age of patients:

<i>Breast</i>	<i>Lung</i>	<i>Colon</i>	<i>Bone</i>	<i>Nasopharynx</i>
46	73	70	45	48
48	53	63		
33				
52				
<i>Kidney</i>	<i>Brain</i>	<i>Leukemia</i>	<i>Stomach</i>	<i>Skin</i>
58	50	60	52	46
				52
				65

The following list shows current status of the patients:

<i>Breast</i>	<i>Lung</i>	<i>Colon</i>	<i>Bone</i>	<i>Nasopharynx</i>
L	D	D	L	D
L	D	L		
L				
L				
<i>Kidney</i>	<i>Brain</i>	<i>Leukemia</i>	<i>Stomach</i>	<i>Skin</i>
L	L	D	D	L
				L
				L

This group of cases seems to match the national picture, i.e., statistical dominance of breast, lung and colon cancers; primarily involving middle and older age groups; and a rough idea of prognosis, the latter being incomplete because of relatively brief period covered.

The emphasis today is early detection and vigorous treatment. How we can best strive toward this goal involves the following principles:

1. The physician must have a high index of sus-

picion. A man of middle age, a cigarette smoker presenting with a cough and cold of two months' duration must be thoroughly studied to exclude lung cancer; certainly not to be given an antibiotic and told to return if not better. A person with blood and mucous in the stools needs a barium enema and sigmoidoscopy rather than to be told he has "colitis" and be given antispasmodics and a bland diet. Fortunately, the majority of cases do turn out to be persistent colds or irritable colons, but to deny a work-up to these patients is to miss the malignancy.

As a further note on the high index of suspicion, the doctor should not be misled by a negative test if other evidence of disease is present. Sometimes the barium enema is negative, sometimes the tumor is just beyond the reach of the sigmoidoscope. Persistence and repeat procedures are necessary until all the evidence is in, especially true in bowel malignancies.

Hematuria — often seen in cases of cystitis, can also be a clue to bladder cancer and must not be dismissed lightly with antibiotic therapy and no warning about recurrence and the need for thorough urologic investigation.

2. The physician should do more breast and rectal examinations than he does. For some reason, these procedures are frequently omitted and yet are so vital in early diagnosis of two common types of cancer.

3. The physician should encourage periodic physical exams as an important means of the early detection of cancer. A thorough annual physical, including Pap smear, Hemacult test on feces, sigmoidoscopy, chest X-Ray, CBC, SMA and Urinalysis, need not take too much of the doctors' time. In spite of the fairly numerous articles on the poor yield of routine periodic health exams, the timely detection of one case of malignancy among one hundred normal physical exams, is rewarding work for the physician and the possibility of saving one life CAN be balanced against statistics of "poor yields" on physicals.

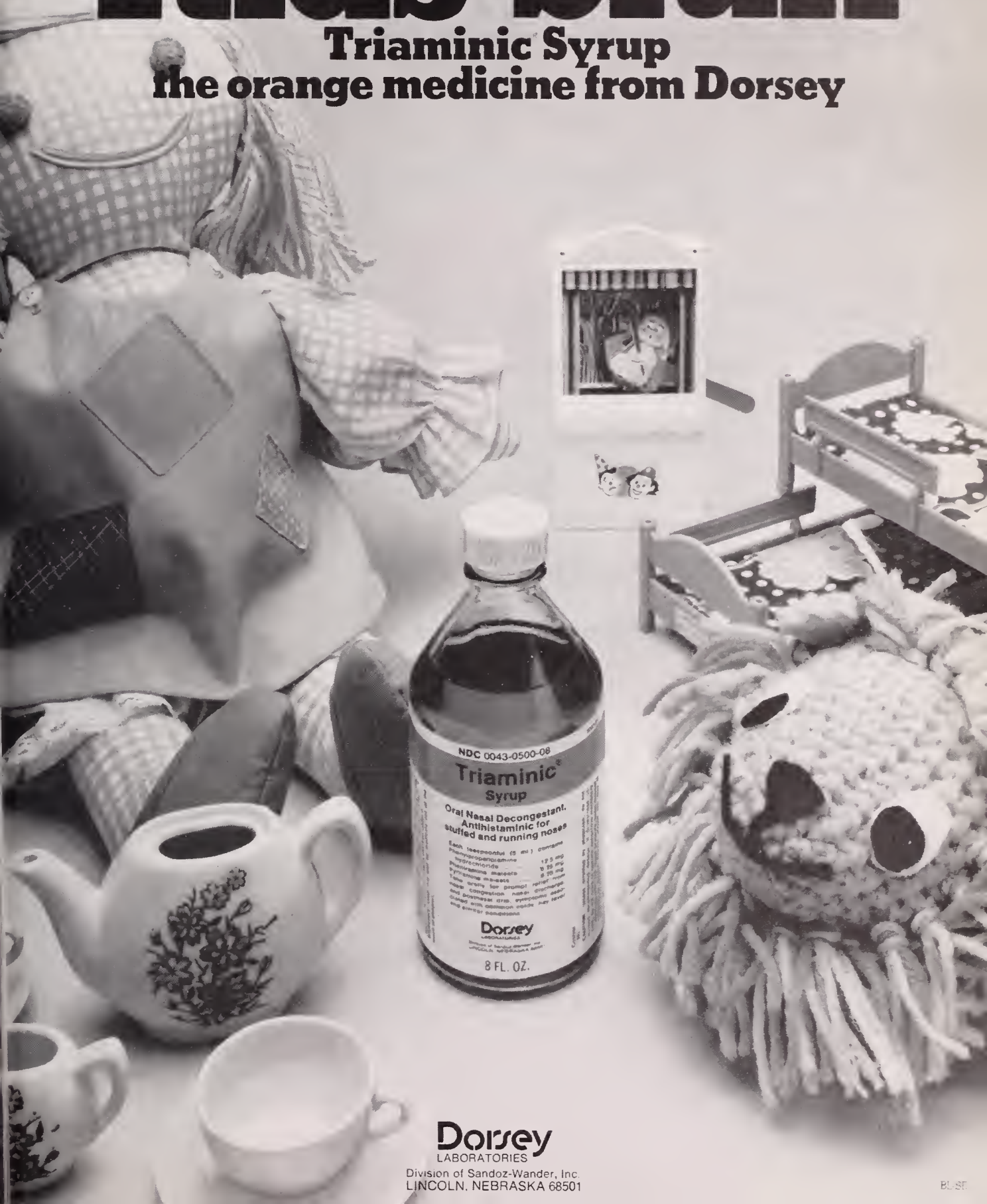
4. The physician should educate his patients to be aware of symptoms and to report to him when in trouble. He should encourage periodic self-examination of the breasts; he should instruct patients to look at their stools; to be aware of their body processes and to take note of change. This is not to develop a group of neurotics and hypochondriacs but

Continued on Page 259

*Department of Family Practice, Maine Medical Center, Portland, Maine 04102.

Kids' Stuff

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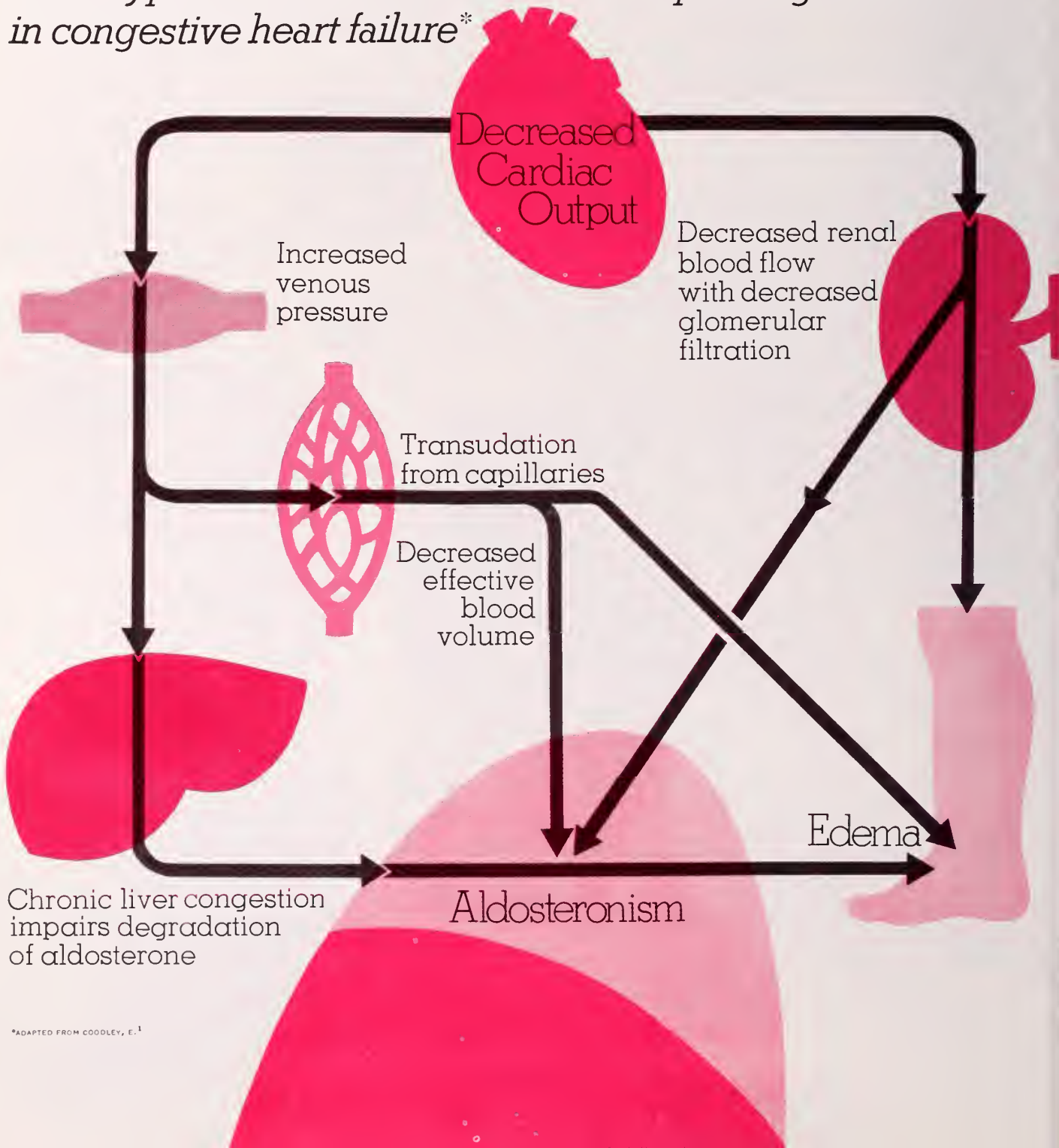
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In congestive heart failure...

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*How hyperaldosteronism leads to and prolongs edema in congestive heart failure**



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Three ways to use Aldactone in congestive heart failure

1. As the only diuretic

- Often sufficient alone.
- Produces gradual, sustained diuresis by blocking aldosterone action in the distal renal tubule.
- Avoids potassium loss.

2. As the basic daily diuretic with an "add-on" alternate-day-diuretic ("A.D.D." schedule)

- Can be administered daily as basic therapy with the additional agent (furosemide or ethacrynic acid) given every second or third day.
- Aldactone plus "A.D.D." schedule minimizes potassium deficiency and potentiates effect of "add-on" diuretic.²
- Avoids acute volume depletion and aldosterone rebound.²

3. As a daily diuretic in combination with a daily dose of a thiazide

- Permits daily additive diuretic effect while maintaining potassium balance.

Indications—Essential hypertension; edema or ascites of congestive heart failure, cirrhosis of the liver and the nephrotic syndrome; idiopathic edema. Some patients with malignant effusions may benefit from Aldactone (spironolactone), particularly when given with a thiazide diuretic.

Contraindications—Acute renal insufficiency, rapidly progressing impairment of renal function, anuria and hyperkalemia.

Warnings—Potassium supplementation may cause hyperkalemia and is not indicated unless a glucocorticoid is also given. Discontinue potassium supplementation if hyperkalemia develops. **Usage of any drug in women of childbearing age requires that the potential benefits of the drug be weighed against its possible hazards to the mother and fetus.**

Precautions—Patients should be checked carefully since electrolyte imbalance may occur. Although usually insignificant, hyperkalemia may be serious when renal impairment exists; deaths have occurred. Hyponatremia, manifested by dryness of the mouth, thirst, lethargy and drowsiness, together with a low serum sodium may be caused or aggravated, especially when Aldactone is combined with other diuretics. Elevation of BUN may occur, especially when pretreatment hyperazotemia exists. Mild acidosis may occur. Reduce the dosage of other antihypertensive drugs, particularly the ganglionic blocking agents, by at least 50 percent when adding Aldactone since it may potentiate their action.

Adverse Reactions—Drowsiness, lethargy, headache, diarrhea and other gastrointestinal symptoms, maculopapular or erythematous cutaneous eruptions, urticaria, mental confusion, drug fever, ataxia, gynecomastia, inability to achieve or maintain erection, mild androgenic effects, including hirsutism, irregular menses and deepening voice. Adverse reactions are infrequent and usually reversible.

Dosage and Administration—For essential hypertension in adults the daily dosage is 50 to 100 mg. in divided doses. Aldactone may be combined with a thiazide diuretic if necessary. Continue treatment for two weeks or longer since an adequate response may not occur sooner. Adjust subsequent dosage according to response of patient.

For edema, ascites or effusions in adults initial daily dosage is 100 mg. in divided doses. Continue medication for at least five days to determine diuretic response; add a thiazide or organic mercurial if adequate diuretic response has not occurred. Aldactone dosage should not be changed when other therapy is added. A daily dosage of Aldactone considerably greater than 75 mg. may be given if necessary.

A glucocorticoid, such as 15 to 20 mg. of prednisone daily, may be desirable for patients with extremely resistant edema which does not respond adequately to Aldactone and a conventional diuretic. Observe the usual precautions applicable to glucocorticoid therapy; supplemental potassium will usually be necessary. Such patients frequently have an associated hyponatremia—restriction of fluid intake to 1 liter per day or administration of mannitol or urea may be necessary (these measures are contraindicated in patients with uremia or severely impaired renal function). Mannitol is contraindicated in patients with congestive heart failure, and urea is contraindicated with a history or signs of hepatic coma unless the patient is receiving antibiotics orally to "sterilize" the gastrointestinal tract.

Glucocorticoids should probably be given first to patients with nephrosis since Aldactone, although useful for diuresis, will not directly affect the basic pathologic process.

For children the daily dosage should provide 1.5 mg. of Aldactone per pound of body weight.

References: 1. Coodley, E. Consultant 12:106-107, 109, 111, 113, 115 (July) 1972. 2. Thorn, G. W., and Louler, D. P., Am. J. Med. 53:673-684 (Nov.) 1972.

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The Role of the Detail Man

"I may be prejudiced, but I am very much in favor of the detail men I meet. Most of them are knowledgeable about the drugs they promote and can be a great help in acquainting me with new medication."

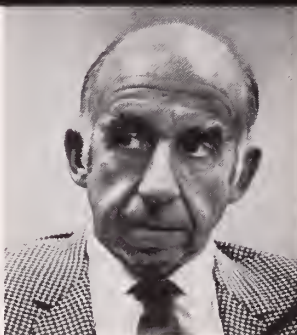
Family Physician's Perception

I think that most general practitioners in this area feel as I do about the detail man. Over the years I have gotten to know most of the men who visit me regularly and they in turn have become aware of my particular interests and the nature of my practice. They, therefore, limit their discussion as much as possible to the areas of interest to me. Since I usually see the same representative again in future visits, it is in his best interest to supply me with the most honest, factual, as well as up-to-date information about his products.

Dr. Willard Gobbell
Family Physician
Encino, California



Dr. Jeremiah Stamler
Chairman
Department of Community
Health and Preventive
Medicine, and Dingman
Professor of Cardiology
Northwestern University
Medical School



"In the total picture of dealing with health problems in this country, there is a potential for detail men to play a meaningful role."

The Positive Influence

My contact with representatives and salesmen of the pharmaceutical industry is the type of contact that people in a medical center, research people, and academic people have and that's in all likelihood on a somewhat different level from that of the practicing physician.

Let me touch on how I personally perceive the role of the sales representative. These men reach large numbers of health professionals. Thus they could be—and at times actually are—disseminators of useful information. They could consistently serve a real educational function in their ability to discuss their products.

At present they do distribute printed material, brochures and pamphlets—some of it scientifically sound and therefore truly useful—as well as some excellent films produced by the pharmaceutical industry. When they function in this

Opinion
&
Dialogue

Is He a Source of Information?

Yes, with certain reservations. The average sales representative has a great fund of information about the drug products he is responsible for. He is usually able to answer most questions fully and intelligently. He can also supply reprints of articles that contain a great deal of information. Here, too, I exercise some caution. I usually accept most of the statements and opinions that I find in the papers and studies which come from the larger teaching facilities. It goes without saying that a physician should also rely on other sources for his information on pharmacology.

Training of Sales Representatives

Ideally, a candidate for the position as a sales representative of a pharmaceutical company should be a graduate pharmacist who has a questioning mind. I don't think this is possible in every case, and so it becomes the responsibility

of the pharmaceutical company to train these individuals comprehensively. It is of very great importance that the detail man's knowledge of the product he represents be constantly reviewed as well as updated. This phase of the sales representative's education should be a major responsibility of the medical department of the pharmaceutical company.

I am certain that most of these companies take special care to give their detail men a great deal of information about the products they produce—information about indications, contraindications, side effects and precautions. Yet, although most of the detail men are well informed, some, unfortunately, are not. It might be helpful if sales representatives were reassessed every few years to determine whether or not they are able to fulfill their important function. Incidentally, I feel the same way about periodic assessments of everyone

in the health care field, whether they be general practitioners, surgeons or salesmen.

Value of Sampling

I personally am in favor of limited sampling. I do not use sampling in order to perform clinical testing of a drug. I feel that drug testing should rightly be left to the pharmacology researcher and to the large teaching institutions where such testing can be done in a controlled environment.

I do not use samples as a "starter dose" for my patients. I do, however, find samples of drugs to be of value in that they permit me to see what the particular medication looks like. I get to see the various forms of the particular medication at first hand, and if it is in a liquid form I take the time to taste it. In that way I am able to give my patients more complete information about the particular medications that I prescribe for them.

capacity they are indeed useful; particularly in the fact that they disseminate broadly based educational material and serve not just as "pushers" of their drugs.

The Other Side of the Coin

Obviously, the pharmaceutical companies are not producing all this material as a labor of love—they are in the business of selling products for profit. In this regard the ambitious and improperly motivated sales representative can exert a negative influence on the practicing physician, both by presenting a one-sided picture of his product, and by encouraging the practitioner to depend too heavily on drugs for his total therapy. In these ways, the salesman has often distorted objective reality and undermined his potential role as an educator.

The Industry Responsibility

Since the detail man must be an information resource as well as a representative of his particular pharmaceutical company, he should be carefully selected and

thoroughly trained. That training, perforce, must be an ongoing one. There must be a continuing battle within and with the pharmaceutical industry for high quality not only in the selection and training of its sales representatives, but also in the development of all of its promotional and educational material.

The industry must be ready to accept constructive as well as corrective criticism from experts in the field and consumer spokesmen, and be willing to accept independent peer review. The better educated and prepared the salesman is, the more medically accurate his materials, the better off the pharmaceutical industry, health professionals and the public—*i.e.*, the patients—will be.

Physician Responsibility

The practicing physician is in constant need of up-dated information on therapeutics, including drugs. He should and does make use of drug information and answers to specific questions supplied by the pharmaceutical representative. However, that informa-

tion must not be his main source of continuing education. The practitioner must keep up with what is current by making use of scientific journals, refresher courses, and information received at scientific meetings.

The practicing physician not only has the right, but has the responsibility to demand that the pharmaceutical company and its representatives supply a high level of valid and useful information. I feel certain that if such a high level is demanded by the physician as well as the public, this demand will be met by an alert and concerned pharmaceutical industry.

From my experience, my impression is that sectors of the pharmaceutical industry are indeed ethical. I challenge the industry as a whole to live up to that word in its finest sense.

Pharmaceutical
Manufacturers Association
1155 Fifteenth Street, N.W.
Washington, D. C. 20005



Mediastinal Pseudocyst

JEREMY R. MORTON, M.D. and NEWELL A. AUGUR, M.D.*

Mediastinal pseudocyst is a rare entity representing extension of an abdominal pancreatic pseudocyst into the posterior mediastinum through the aortic or esophageal hiatus. To our knowledge, only nine cases of this type have been previously reported. The underlying pancreatitis may have an alcoholic or traumatic etiology or may be idiopathic. The presenting symptoms and signs of this disease vary widely and often there is no clinical evidence of intra-abdominal pathology. Since proper surgical treatment can best be accomplished transabdominally, an accurate preoperative diagnosis is extremely important.

The following case report illustrates several common features of mediastinal pseudocyst as well as a peculiar presenting symptom, dysphagia, which has not been noted in previously reported cases.

CASE REPORT

B. B. MMC #129384. A 49-year-old housewife was admitted to the Maine Medical Center on August 7, 1971 complaining of inability to swallow either solid or liquid foods for four days.

The patient's past history revealed that she had been active socially and quite liberal in her consumption of alcohol for a number of years. Between 1967 and 1971, she had suffered five documented episodes of acute pancreatitis requiring hospitalization and responding to conservative medical management.

In February 1971, the patient was hospitalized in St. Louis, Missouri with severe dysphagia, malnutrition, and aspiration pneumonia. Barium study of the esophagus revealed a small hiatal hernia with narrowing, irregularity, and anterior displacement of the distal esophagus. Esophagoscopy demonstrated significant mucosal inflammation and narrowing of the distal esophagus; the cardia was not visualized.

The esophagus was explored through a left thoracotomy incision. The distal esophagus was found to be grossly normal but was displaced anteriorly by a tense cystic structure protruding from the abdomen through the esophageal hiatus.

The cyst contained 800 cc. of clear brownish fluid with an amylase concentration of 4,000 Somogyi units and was continuous with a large cyst within the abdomen. External drainage of the abdomen portion of the cyst was established by means of a large Foley catheter introduced transabdominally and the thoracic portion of the cyst was closed. Postoperatively the drainage ceased after eight days and the patient recovered uneventfully.

She remained well despite continued use of alcohol for the ensuing six months until a week prior to her most recent hospital admission. At this time, following three days of exceptionally heavy drinking, she developed progressive dysphagia over a period of 72 hours without other symptoms. The dysphagia became so severe that she could not swallow even clear liquids.

On admission to the hospital, her physical examination was unremarkable except for the presence of a slightly enlarged liver. No other abdominal masses were palpable.

The hemoglobin, white blood cell count, and serum amylase were normal. The blood glucose was 207 mg. per 100 ml., the alkaline phosphatase 160 international units, and the SGPT 150

Sigma units. The total serum protein was 6.0 gm. per 100 ml. and the albumin fraction 2.7 gm. per 100 m.

Roentgenograms of the abdomen showed scattered calcifications throughout the pancreas. Roentgenographic study of the barium filled esophagus and stomach demonstrated anterior displacement of the distal esophagus with extrinsic obstruction at the hiatus and anterior and lateral displacement of the stomach (Figure 1). Esophagoscopy, using a fiberoptic instrument, revealed normal appearing mucosa and no suggestion of intrinsic disease at the point of obstruction.

Laparotomy was performed on the third hospital day. The stomach was completely free of any posterior adhesions and there was no fluid in the lesser sac. The inferior margin of the pancreas was palpable and had a firm, rubbery consistency. The superior margin could not be felt, however, for in this area the posterior parietal peritoneum was displaced anteriorly by what on aspiration was found to be fluid behind it. The fluid was clear with a brownish color and has an amylase content of 600 caraway units (normal range: 60-160). Because of the size and diffuse nature of the pseudocyst, the prominence of the posterior peritoneum was not particularly striking and might conceivably have been overlooked in a cursory examination of the abdominal contents.

A small opening was made through the fused parietal peritoneum and pseudocyst wall into the lumen of the cyst and its dimensions explored. It was found to extend across the entire upper abdomen as well as into the posterior mediastinum through the esophageal hiatus.

Since neither the stomach nor the duodenum was adherent to the pseudocyst wall, the jejunum was used to provide internal drainage of the cyst employing the Roux-en-y technique. Biopsy of the cyst wall confirmed the diagnosis of pseudocyst and biopsy of the liver showed fatty infiltration.

Postoperatively the patient enjoyed a completely uneventful recovery and was able to eat a regular diet with no difficulty on the fifth day. She was discharged on the eighth postoperative day and one month after surgery her liver function studies had all returned to normal. An upper gastrointestinal series showed no residual deformity of the esophagus or stomach (Figure 2).

DISCUSSION

Pancreatic pseudocyst represents an encapsulation of pancreatic secretions, serum and blood which have escaped from an injured or diseased pancreas. In the majority of cases, the fluid collects within the lesser peritoneal sac and the resulting pseudocyst presents as a large, rounded, easily palpable epigastric mass. Less commonly, the fluid may escape from the posterior surface of the pancreas and dissect beneath the posterior parietal peritoneum. Retroperitoneal pseudocysts which develop in this manner may be very extensive and yet very subtle in their presentation. Mediastinal pseudocysts represent a variant or extension of the retroperitoneal variety in which the collecting fluid, presumably because of preexisting fibrosis, finds the esophageal or aortic hiatus the path of least resistance.

Nine previously reported cases of mediastinal pseudocyst have been found in the literature which

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Fig. 1. Radiographs of the barium filled esophagus and stomach in the anteroposterior and lateral projections before surgery.

CLINICAL FEATURES OF 9 REPORTED CASES OF MEDIASTINAL PSEUDOCYST

Reference	General					Abdominal				Thoracic				Radiographic					Treatment	Result
	Age/Sex	Etiology	Elev. Amylase	Weight Loss	Nausea & Vomiting	Pain	Tenderness	Mass	Dyspnea	Pain	Dysphagia	Effusion	Post-Mediastinal Mass	Displaced Esophagus	Displaced Stomach					
Clauss (1) 1958	41 M	Alcohol	?	+	—	—	—	—	—	+	—	—	+	+	—	External Drainage & Sphincterotomy	Cured			
Edlin (2) 1951	60 M	?	?	—	—	—	—	—	+	—	—	+	+	+	+	Treated for Congestive Heart Failure	Died 14 hrs. — cyst compressing left atrium			
Galligan (3) 1966	10 F	?	?	+	+	—	—	+	—	—	—	—	+	+	+	Cystgastrostomy	Cured			
Gee (4) 1969	46 F	Alcohol	+	—	—	—	—	—	+	+	—	+	+	—	—	Caudal Pancreatectomy	Cured			
Laird (5) 1965	15 M	Trauma	+	+	+	—	—	—	—	+	—	+	—	—	—	Caudal Pancreatectomy	Cured			
McClintock (6) 1962	46 F	Alcohol	—	—	+	+	+	—	+	—	—	+	+	+	+	Cystgastrostomy	Cured			
Reynes (7) 1969	33 M	Alcohol	?	—	—	+	—	—	—	—	—	—	+	+	+	Cystgastrostomy	Recurrence of abdominal part of pseudocyst			
Sybers (8) 1968	44 F	?	+	+	—	+	+	+	—	—	—	+	—	—	—	External drainage	Died 13 days — cyst extended to neck			
Weidman (9) 1969	32 M	Alcohol	+	—	—	+	+	—	+	—	—	+	+	+	+	Cystgastrostomy	Cured — (Cardiac Cath. Preop; Elev. L/A pressure and decreased C.O.)			
Present Case 1971	49 F	Alcohol	—	—	—	—	—	—	—	—	+	—	—	+	+	Ext. drainage Feb. '71 Roux-en-y Cystjejunostomy August 1971	Recurred Cured			



Fig. 2. Radiograph of the barium filled esophagus and stomach in the left posterior oblique projection after surgery.

are listed in the table along with the present case. In seven cases, the mediastinal portion of the cyst confined itself to the distal third of the posterior mediastinum. In two cases, the cyst extended to the level of the carina and produced significant obstruction to left atrial filling with pulmonary venous congestion and markedly decreased cardiac output. In another patient, the cyst extended all the way into the neck and presented as a submandibular mass.

Five of the nine patients presented with abdominal pain; three of these had epigastric tenderness but only one had a palpable mass. Six patients had a pleural effusion; four of these had associated dyspnea and three had chest pain on the side of the effusion. Only two patients had pain (back pain) which could be interpreted as arising in the mediastinum. Serum amylase was measured in six patients and was elevated in three. In only two patients with pleural effusions was the amylase content of the

fluid measured and in both it was significantly elevated.

In eight of the patients, an abnormal density was demonstrated in the lower mediastinum either by plain roentgenogram or barium esophagogram. In the other two patients, it is likely that an abnormality would have been noted had it been looked for. Considering the pathology, it is surprising that the present case is the only one in which dysphagia was a significant complaint.

The treatment of mediastinal pseudocyst is surgical and consists of adequate treatment of its abdominal component. This may be excised with the involved portion of the pancreas or may be drained either externally or into some portion of the bowel. Each of these methods has been used successfully in the cases listed here and any one may represent the procedure of choice in an individual patient.

In most instances, however, internal drainage of the pseudocyst into the stomach if appropriate or into the jejunum, using a Roux-en-y anastomosis, has been found to be the most satisfactory procedure.

SUMMARY

A case of mediastinal extension of a pancreatic pseudocyst with sudden dysphagia is presented. Nine previously reported cases of mediastinal pseudocyst are discussed for comparison. Suspicion of pancreatitis, displacement of the distal esophagus, and pleural effusion are the findings most commonly observed. Internal drainage of the abdominal component of the cyst into the stomach or bowel is the treatment of choice.

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Dr. Morton, 321 Brackett Street, Portland, Maine 04102
Dr. Augur, 175 Vaughan Street, Portland, Maine 04102

The Board of Directors of the Pine Tree Organization invites all physicians licensed to practice in the State of Maine to join the organization. A membership application follows. Please complete it and forward it to the Pine Tree Organization for Professional Standards Review, Inc., P.O. Box 706, Augusta, Maine 04330.

PINE TREE ORGANIZATION FOR PROFESSIONAL STANDARDS REVIEW, INC.

MEMBERSHIP APPLICATION

I, _____, presently admitted to practice medicine in the State of Maine, hereby apply for membership in the Pine Tree Organization for Professional Standards Review, Inc.

I understand that there are no financial commitments (i.e. dues) as a condition to my membership and that my membership shall continue as long as I am licensed to practice medicine in the State of Maine or until I voluntarily elect to resign. Resignation may be made at any time in writing directed to the Clerk of Pine Tree Organization for Professional Standards Review, Inc.

.....
Date

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Name

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Street

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City

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County

NOTE: The House of Delegates of the Maine Medical Association voted on June 16, 1974 to continue qualified support of PSRO development in Maine, adding the recommendation that members of the Maine Medical Association should join the Pine Tree Organization For Professional Standards Review, Inc. The American Medical Association's House of Delegates passed the following resolution on June 26, 1974 in Chicago:

"Resolved, That this House of Delegates instruct the Board of Trustees of the Association to direct its efforts to achieve constructive amendments to the PSRO law and to ensure appropriate regulations and directives, with particular effort directed at amending those sections of the law which present potential dangers in the areas of confidentiality, malpractice, development of norms, quality of care, and the authority of the Secretary of HEW; and be it further

"Resolved, That the Association should continue its efforts to achieve legislation which allows the profession to perform peer review in accordance with the profession's philosophy and the best interest of the patient; and be it further

"Resolved, That individual state associations which elect non-participation shall not be precluded from such a position by this Association's policy statement, but should be urged to develop effective non-PSRO review programs which embody the principles endorsed by the profession as constructive alternatives to PSRO; and be it further

"Resolved, That if ongoing evaluation of the PSRO program reveals that it does, in fact, adversely affect the quality of patient care, or conflict with the Association policy, the Board of Trustees be instructed to use all legal and legislative means to rectify these shortcomings."

Fall Meeting of the M.M.A. House of Delegates

Saturday, December 14, 1974

Eastern Maine Medical Center, Bangor, Maine

12:30 P.M. — Registration; 1:00 P.M. — Lunch; 2:00 P.M. — Meeting

Special Article

Rheumatic Fever VII: Prevention of Bacterial Endocarditis

Bacteremia, even though transitory, is a potential threat in patients with rheumatic heart disease, congenital heart disease or patients with intracardiac prostheses. During bacteremia, bacteria present in the blood may lodge on damaged heart valves or prostheses and cause bacterial endocarditis.

Transitory bacteremia can result from tooth extraction, oral surgical procedures, manipulation of periodontal tissues, removal of tonsils and adenoids, bronchoscopy and instrumentation of the genitourinary tract. Although less well documented, it is probable that bacteremia is also associated with other procedures such as intravascular catheterization, sigmoidoscopy, childbirth and surgery of the lower intestinal tract.

In patients with rheumatic or congenital heart disease, antibiotics should be used in conjunction with the above procedures to decrease the likelihood of bacterial endocarditis. The administration of appropriate antibiotics should prevent bacteremia or reduce its magnitude and duration should it occur and eradicate bacteria that may implant on heart valves or prostheses before an established infection develops.

Dental Manipulation, Oral Surgery, and Bronchoscopy

For procedures involving the oro-pharynx, penicillin is the drug of choice. Broad spectrum antibiotics may decrease bacteremia but cannot be relied on to eradicate bacterial implants. Sulfonamides are not satisfactory.

The dose of penicillin used for prophylaxis against Group A streptococcal infection and consequent rheumatic fever is *not* adequate for prevention of bacterial endocarditis. Larger doses of penicillin are required to prevent implantation of bacteria and eradicate small bacterial implant should they occur.

While there is no disagreement concerning the advisability of using penicillin immediately before and after the above procedures, the wisdom of using antibiotics for *several days* before these procedures are carried out has not been established. Some evidence exist that such pretreatment may cause sensitive bacteria (e.g., viridans streptococci and staphylococci) normally present in the oral cavity and upper respiratory tract, to be replaced by penicillin resistant strains.

The treatment schedule recommended by the American Heart Association is as follows:*

*Prevention of Bacterial Endocarditis American Heart Association Pamphlet, EM 113A.

**Management of Bacterial Endocarditis: T. W. Williams, J. Viroslav, V. Knight, American Journal of Cardiology, 25: 186-191, 1970.

a) On the day of the procedure, procaine penicillin 600,000 units and 600,000 units aqueous penicillin intramuscularly one or two hours before the procedure (although intramuscular penicillin is more reliable, because of practical considerations some dentists and physicians use oral penicillin when the full cooperation of the patient is assured).

b) For two days after the procedure, procaine penicillin 600,000 units intramuscularly is administered each day. In selected instances, 250 mgm. alphaphenoxymethyl penicillin (Penicillin V) or 500,000 units of buffered penicillin G four times daily by mouth on each day may be used for those patients in whom full cooperation is anticipated and injection is assured.

For patients who are allergic to penicillin, erythromycin should be used in the dose of 250 mgm. orally four times daily for adults and older children. For small children, a dose of 20 mgm. per pound per day divided into 3 or 4 evenly spaced doses may be used.

Instrumentation of the Genitourinary Tract, Surgery of the Lower Intestinal Tract and Childbirth

Transient bacteremia due to penicillin resistant organisms may occur during gastrointestinal and genitourinary tract manipulation. The use of penicillin alone in the doses above is not effective. It is recommended that, during these procedures, the above intramuscular penicillin regimen be used in conjunction with streptomycin 1 or 2 grams intramuscularly on the day of the procedure and for two days following the procedure. In children, streptomycin may be given in a dose of 50 mgm. per kg not to exceed 1 gram per day. In patients who are sensitive to penicillin, a combination of erythromycin and streptomycin may be of some use although very little information is available about these antibiotic combinations and their efficacy in preventing bacterial endocarditis due to enterococci. Vancomycin has been used to treat enterococcal endocarditis in penicillin sensitive patients.**

Bacterial endocarditis continues to be a severe and potentially lethal infection. The use of antibiotic prophylaxis is warranted in susceptible patients undergoing procedures known to be associated with transient bacteremia.

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Rational Use Of Psychotropic Drugs

III. Major Tranquilizers

DAVID J. GREENBLATT, M.D. and RICHARD I. SHADER, M.D.

The first two articles in this series discussed the pharmacologic properties and clinical uses of the *sedative-hypnotics*. These include the *hypnotic* drugs (soporifics or "sleeping pills") and the *sedatives* (anxiety agents, anxiolytics, or *minor* tranquilizers). The sedative-hypnotics produce dose-dependent central nervous system (CNS) depression, have some degree of addiction potential, possess anticonvulsant properties, and have essentially no effect upon autonomic function. This communication will consider the *major tranquilizers* (antipsychotics or neuroleptics), a class of drugs distinctly different from the sedative-hypnotics.

Three important categories of clinically useful major tranquilizers are: the phenothiazines, the butyrophenones and the thioxanthenes. The phenothiazines, in turn, are subdivided according to their side-chain configuration into dimethylaminopropyl (aliphatic), piperidine, and piperazine derivatives (Figure 1 and Table 1). The major tranquilizers are uniquely effective in reversing aspects of disordered thought associated with schizophrenia.¹⁻⁷ Hence, they are primarily used in relatively high doses as antipsychotic agents in psychiatry. Except for differences in milligram potency, most major tranquilizers appear to have similar efficacy in the treatment of schizophrenia. On the other hand, the various types of antipsychotic agents differ considerably in their additional or secondary pharmacologic properties, side effects, and toxicity. These differences are of particular importance to the nonpsychiatrist who administers major tranquilizers to nonpsychotic individuals.

PHARMACOLOGIC PROPERTIES

Unlike sedative-hypnotics, major tranquilizers

do not produce general anesthesia, have no addiction potential, cause a reduction in seizure threshold, and produce a variety of changes in extrapyramidal motor control and autonomic nervous system function. Pertinent pharmacologic properties are discussed in this section and summarized in Table 2.

Non-Specific Sedation

Agitation, hyperactivity, and disordered sleep are common manifestations of the syndrome of schizophrenia. Because major tranquilizers ameliorate the underlying thought disorder responsible for such manifestations, any drug of this type can have a calming effect and improve sleep in a psychotic patient. In non-psychotic individuals, major tranquilizers produce variable non-specific sedation depending upon the particular drug and the patient's sensitivity to it. Phenothiazines and thioxanthenes with dimethylaminopropyl substitutions and, to a slightly lesser extent, piperidine phenothiazines have relatively strong sedative effects. Butyrophenones and piperazine-substituted phenothiazines or thioxanthenes produce much less sedation. Thus a drug such as haloperidol, for example, can appear to act differently depending upon the type of patient who receives it. A healthy individual who is given haloperidol to treat nausea and vomiting may experience little or no drowsiness or sedation,⁸⁻¹⁰ but the same dose given to an agitated, sleepless schizophrenic patient can have a marked tranquilizing and soporific effect.¹¹⁻¹⁵

Adrenergic Antagonism

Alpha-adrenergic blocking properties of major tranquilizers approximately parallel their non-specific sedative effects. Dimethylaminopropyl derivatives of phenothiazines and thioxanthenes are potent alpha antagonists, whereas piperazine derivatives and butyrophenones are weak. Postural hypotension is the most important consequence of this property,¹⁶ and should be considered before chlorpromazine, promazine, or chlorprothixene is administered. In some cases, chlorpromazine-induced hypotension has been serious or fatal,^{17,18} but it is not established exactly how frequently such events occur. We recommend that supine and standing blood pressure measurements be made before

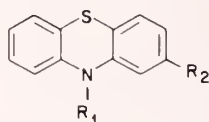
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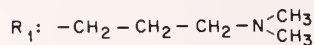
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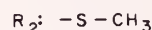
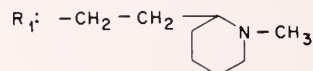
PHENOTHIAZINES



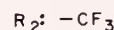
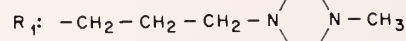
Chlorpromazine (dimethylaminopropyl)



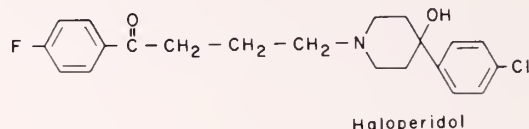
Thioridazine (piperidine)



Trifluoperazine (piperazine)



BUTYROPHENONES



THIOXANTHENES

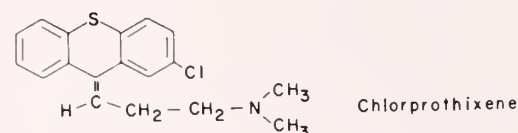


Figure 1. Structural Formulas of Representative Major Tranquilizers.

Phenothiazines are subdivided into derivatives having dimethylaminopropyl, piperidine, and piperazine side-chain substitutions at position R₁. Chlorpromazine, thioridazine, and trifluoperazine, respectively, represent each of these groups. An "electron-drawing" substitution at position R₂ is necessary for antipsychotic activity. Promazine and promethazine (not pictured) are phenothiazines without such R₂ substitutions; these two drugs have little antipsychotic effect. Of the two butyrophenones available for clinical use in the United States, only haloperidol is widely used in clinical psychiatry. Droperidol (not pictured) is given almost exclusively by anaesthesiologists as a premedicant or as an induction agent. Chlorprothixene is representative of the thioxanthene major tranquilizers. It resembles chlorpromazine in structure and clinical activity. Thiothixene (not pictured), another thioxanthene derivative, resembles piperazine phenothiazines in structure and activity.

and after a test dose, particularly in the elderly.

A second consequence of alpha-adrenergic blockade is inhibition of ejaculation. For reasons that are not clear, this troublesome side effect is most com-

TABLE 1

MAJOR TRANQUILIZERS (ANTIPSYCHOTIC DRUGS) AVAILABLE FOR CLINICAL USE		
Drug Category	Generic Name	Trade Name
PHENOTHIAZINES		
<i>Dimethylaminopropyl (aliphatic) derivatives</i>		
	Chlorpromazine*	Thorazine
	Trifluoperazine*	Chlor-PZ
	Promazine*†	Vesprin
	Promethazine*†	Sparine
		Phenergan
		Remsed
<i>Piperidine derivatives</i>		
	Thioridazine	Mellaril
	Mesoridazine*	Serentil
	Piperacetazine*	Quide
<i>Piperazine derivatives</i>		
	Prochlorperazine*	Compazine
	Trifluoperazine*	Stelazine
	Butaperazine	Repoise
	Perphenazine*	Trilafon
	Fluphenazine**	Prolixin
		Permitil
	Acetophenazine	Tindal
	Carphenazine	Proketazine
BUTYROPHENONES		
	Haloperidol*	Haldol
THIOXANTHENES		
<i>Dimethylaminopropyl (aliphatic) derivatives</i>		
	Chlorprothixene*	Taractan
<i>Piperazine derivatives</i>		
	Thiothixene*	Navane

Asterisk (*) indicates that an injectable preparation is available.

**Fluphenazine is available in both short- and long-acting injectable preparations.

†Promazine and promethazine are phenothiazines with aliphatic side-chains having little antipsychotic effect but possessing most other secondary pharmacologic properties (see Table 2).

monly associated with the piperidine phenothiazines, thioridazine^{19,20} and mesoridazine.²¹

Antiemetic Effects

Piperazine derivatives and butyrophenones are potent antiemetics when nausea or vomiting is due to nonvestibular causes.^{22,23} Dimethylaminopropyl derivatives are also effective. When emesis is related to vestibular disorders such as motion sickness, labyrinthitis, or Menière's disease, these drugs are much less effective. Piperidine phenothiazines are ineffective antiemetics regardless of the etiology of nausea or vomiting.

Extrapyramidal Symptoms

Major tranquilizers induce a variety of bizarre involuntary movements in a substantial proportion of individuals who take the drugs.²⁴⁻³⁰ Blockade of dopamine receptors in the basal ganglia is the postulated cause of these drug-related extrapyramidal movement disorders.³¹⁻³⁷

Acute dystonic reactions are the most troublesome of the extrapyramidal symptoms. These acute

TABLE 2

PRINCIPAL PHARMACOLOGIC PROPERTIES OF MAJOR TRANQUILIZERS

DRUG CATEGORY	Milligram Potency	Non-Specific Sedation	Adrenergic Antagonism	Antiemetic Effect	Extrapyramidal Effects*
PHENOTHIAZINES					
Dimethylaminopropyl	Low	Strong	Moderate to Strong	Moderate	Type II
Piperidine	Low	Moderate	Moderate	Weak	Uncommon
Piperazine	High	Weak	Weak	Strong	Types I and II
BUTYROPHENONES					
	High	Weak	Weak	Strong	Types I and II
THIOXANTHENES					
Dimethylaminopropyl	Low	Strong	Moderate to Strong	Moderate	Type II
Piperazine	High	Weak	Weak	Strong	Types I and II

*Type I: Acute dystonic reactions

Type II: Akathisia and parkinsonism (see text for explanation)

spasms of nuchal, truncal, buccal, or oculomotor muscle groups can be frightening or disabling. Dystonic reactions usually are induced by piperazine derivatives or butyrophenones, and can occur in young, healthy individuals even after a single dose of one of these drugs. More chronic, insidiously-developing extrapyramidal symptoms can occur with any of the major tranquilizers. These include a syndrome of motor restlessness (*akathisia*) and a triad of akinesia, rigidity and tremor resembling *parkinsonism*. Middle-aged and elderly chronic schizophrenics taking major tranquilizers for weeks or months seem most susceptible to drug-induced akathisia or parkinsonism. For reasons that are not clear, piperidine phenothiazine derivatives uncommonly produce extrapyramidal reactions of any kind.

CNS cholinergic blockade effectively reverses movement disorders induced by major tranquilizers. The neuropharmacologic basis for this interaction is discussed elsewhere.^{29,31,35} Acute dystonic reactions may require parenteral treatment. Intravenous benztropine (0.5 to 2.0 mg) or diphenhydramine (25 to 50 mg) can provide dramatic reversal of such reactions. Akathisia or parkinsonism can be treated by oral benztropine or trihexyphenidyl in doses of 2 to 8 mg per day. Oral antiparkinsonian drugs are effective when given on a once- or twice-daily basis.³⁸ They do not compromise the antipsychotic efficacy of the major tranquilizers.³⁹ Some authorities suggest that antiparkinsonian drugs should not be given prophylactically, but only when extrapyramidal reactions appear.⁴⁰⁻⁴² Once therapy is started it need not be continued indefinitely.⁴³

Cardiac Toxicity

The possible cardiotoxic effects of major tranquilizers have generated much concern.^{44,45} Reports of sudden unexplained deaths among previously healthy patients taking these drugs suggest that major tranquilizers may have the potential to precipi-

tate fatal ventricular tachyarrhythmias.⁴⁴⁻⁴⁸ Although some experimental and pathological studies are consistent with a cardiotoxic effect,⁴⁹⁻⁵² it is not adequately established whether major tranquilizers do, in fact, have clinically important cardiac toxicity or cause fatal arrhythmias.

In several reports thioridazine, in particular, has been implicated.^{44,45,53-56} Usual doses of thioridazine can produce electrocardiographic changes resembling hypokalemia which are reversible upon administration of potassium.⁵⁷⁻⁶² Such changes may be benign and unrelated to the presumed association with life-threatening arrhythmias.

Temperature Regulation

Major tranquilizers impair central thermoregulatory mechanisms. Animals treated with these drugs are unable to maintain proper body temperature when they are exposed to hot or cold environments.^{63,64} Severe hyperpyrexia has been reported in phenothiazine-treated humans during hot weather or exercise.⁶⁵⁻⁷² Hypothermia can also occur, particularly in elderly individuals.⁷³⁻⁷⁵ Thermoregulatory impairment by major tranquilizers can be therapeutically exploited as adjunctive hypothermic treatment in patients with hyperpyrexia due to infection, CNS lesions, or heatstroke.⁷⁶

Cholinergic Blockade

Major tranquilizers have clinically important anticholinergic effects. Manifestations usually are limited to mild dryness of mouth or tachycardia. In predisposed individuals, the drugs can exacerbate untreated glaucoma or precipitate urinary retention⁷⁷ or intestinal obstruction.⁷⁸ Major tranquilizers can potentiate toxicity due to other anticholinergic drugs and should never be used to treat delirium or hyperpyrexia due to cholinergic blocking drugs.⁷⁹⁻⁸²

CLINICAL USE

Major tranquilizers have a number of legitimate

clinical uses outside of psychiatry. To choose a particular drug, a physician must consider which pharmacologic properties are desirable for the particular situation, and which potential toxic effects will be least harmful. Many major tranquilizers are available (Table 1), but physicians need not be familiar with each. Since drugs within each subcategory (Table 2) have similar or identical properties, a knowledge of three or four drugs (e.g., chlorpromazine, thioridazine, prochlorperazine, haloperidol) is quite sufficient. Choice of parenteral dosage is simplified by the manufacturers' packaging techniques. Concentration of nearly all solutions available for parenteral administration are prepared such that 0.5 to 2.0 ml contains an appropriate initial intramuscular dose.

Confusion and Delirium

The appearance of agitation, combativeness, confusion, or delirium in a hospitalized patient should not suggest that a psychotropic drug be immediately used, but rather that an underlying cause be sought.⁸³ The rationality of this approach has been stressed previously. Hypoxia, hypercapnia, hypoglycemia, fever, dehydration, electrolyte disturbances, CNS lesions, and withdrawal from an addicting drug (ethanol, barbiturates, opiates) are common etiologies of delirium.⁸³ Frequently confusion is caused by other drugs such as corticosteroids,⁸⁴ lidocaine,⁸⁵ pentazocine,⁸⁶ digitalis,⁸⁷ or anticholinergics.⁷⁹⁻⁸²

Psychotropic drugs should be withheld unless agitation is unmanageably severe and a remediable underlying cause cannot be found. Nocturnal delirium in elderly patients ("sundowning") is probably the most common variety of "idiopathic" delirium among hospitalized patients. Anecdotal evidence suggests that this syndrome can be precipitated or made worse by sedative-hypnotic drugs such as barbiturates, chloral hydrate or diazepam.^{88,89} Until adequate data are available, sedative-hypnotics should not be given to acutely confused and agitated elderly patients. If pharmacotherapy is necessary a small intramuscular dose (0.5 to 1.0 ml) of a sedating phenothiazine such as chlorpromazine will usually have an adequate calming effect. Delirium and confusion can also occur in patients confined to intensive care units.⁹⁰⁻⁹² The approach to pharmacotherapy in this setting is similar.

Alcohol Withdrawal

Major tranquilizers are often used to treat the alcohol withdrawal syndrome. Several controlled studies, however, suggest that these drugs are no more effective than sedative-hypnotics such as chlordiazepoxide, chloral hydrate, or paraldehyde.⁹³⁻⁹⁸ Furthermore, serious complications of therapy, such as seizures and hypotension, are significantly more frequent when major tranquilizers

are used.⁹⁵⁻⁹⁸ The data indicate that antipsychotic drugs should not be the tranquilizing agents of first choice in the treatment of alcohol withdrawal.⁹⁹

Amphetamine Toxicity

Pharmacotherapy of amphetamine-induced toxic psychoses ("speed trips") is often not necessary. In many patients, the syndrome is short-lived since amphetamines are rapidly excreted. Some drug abusers will calm down when reassured by a physician that their hallucinations and delusions are drug-induced and will disappear when the drug "wears off."

Major tranquilizers appear to act as a specific antidote for amphetamine toxicity.^{100,101} Since they are obviously not innocuous, major tranquilizers should not be used unless agitation is severe and not responsive to reassurance alone. Pharmacotherapy is also indicated when life-threatening hypertension or hyperpyrexia complicates amphetamine use.

Establishment of an amphetamine as the etiologic agent is essential before an antipsychotic drug is given as an antidote. Anticholinergic agents can also produce toxic delirium which, if not carefully evaluated, can be mistaken for amphetamine psychosis. Major tranquilizers exacerbate and prolong delirium due to anticholinergics.⁷⁹⁻⁸²

Nausea and Vomiting

With the exception of piperidine phenothiazines, major tranquilizers are effective antiemetics when nausea or vomiting is of nonvestibular etiology. The most popular drugs are prochlorperazine, perphenazine, chlorpromazine, and haloperidol. Again, the usual effective intramuscular dose is between 0.5 and 2.0 ml. Major tranquilizers are relatively ineffective when emesis is due to vestibular disorders such as motion sickness, Meniere's disease, or labyrinthitis, in which case an anticholinergic-antihistaminic drug (i.e., dimenhydrinate, meclizine) must be used. Since antiemetic drugs constitute only symptomatic therapy, their use always carries the hazard of masking the underlying cause of the symptom.

Hyperpyrexia

When fever is high enough to be life-threatening by itself (i.e., higher than 105°F), it is not always explained by an infectious process alone. A drug-induced condition or a structural CNS lesion usually is present in addition to, or instead of, infection. Because major tranquilizers impair central thermoregulation, they can be used to facilitate symptomatic cooling measures (salicylates, alcohol sponging, cold blanket, etc.).⁷⁶ Care should be taken to avoid "overshoot hypothermia." Symptomatic measures should cease when body temperature has fallen to 101°F.

Hiccough

Intractable hiccough frequently is an ominous symptom, hence its cause should be evaluated thoroughly. Inferior wall myocardial infarction and neoplastic disease involving the diaphragm are common etiologies. Obviously the symptom is subjectively troublesome since it interferes with rest and sleep. Chlorpromazine and other major tranquilizers usually will relieve intractable hiccough, although their mechanism of action is not understood.

Other Uses

Major tranquilizers, particularly chlorpromazine, have been used to treat circulatory failure (shock) accompanied by intense vasoconstriction.¹⁰² Other uses include tetanus,^{103,104} choreiform movement disorders,¹⁰⁵⁻¹⁰⁷ acromegaly,¹⁰⁸ and accelerated hypertension.¹⁰⁹ The use of major tranquilizers for these conditions requires further evaluation.

COMMENT

This article has discussed a few of the important pharmacologic and potentially toxic effects of major tranquilizers. Unlike the sedative hypnotics, antipsychotic drugs can influence the function of almost every organ system in the body. The rational clinical use of major tranquilizers requires considerable understanding and caution.

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Continued on Page 260



CONFIDENTIALITY OF RECORDS ENFORCED

Maine Blue Cross and Blue Shield has developed a program of employee education to ensure that all confidential information in patient/subscriber records is utilized correctly.

A Maine Blue Cross and Blue Shield policy letter on the subject has been in effect for a year, and a video tape to be used in training employees was recently developed which adds visual reinforcement to the policy letter.

All employees of Maine Blue Cross and Blue Shield who are expected to have access either directly or indirectly to medical or financial information have been given a copy of the confidentiality policy and will view the confidentiality videotape.

The Maine Blue Cross and Blue Shield confidentiality policy revolves around the fact that the same ethics that apply to doctors and hospital employees apply to Blue Cross and Blue Shield employees, i.e., a person's state of health is his personal business. According to the policy, the diagnosis and treatment of his illness is a matter between him, his doctor and other healthcare personnel who are helping him to get well. If this information were carelessly released to persons not directly involved in assisting the patient's recovery, it could cause him and his family great embarrassment and serious worry.

Blue Cross and Blue Shield employees are also admonished that a patient is not always aware of his own diagnosis. The policy states that a doctor may feel that by withholding information about a patient's condition, he is saving the patient and his family much worry. Therefore, a Blue Cross and Blue Shield employee inadvertently giving a patient his diagnosis could cause him serious harm mentally and physically.

The policy stipulates that the information contained on a subscriber's claim is strictly confidential and should never be divulged except to other Maine Blue Cross and Blue Shield employees, and then only as required in performance of duty.

Employees are further instructed that any information regarding medical or financial data should never be released over the telephone except in clarification of data to a provider.

Administrative action for a breach of confidentiality at Maine Blue Cross and Blue Shield can be severe. Unauthorized release of confidential information may result in dismissal, as well as subjecting the individual and the company to possible law suits by patients whose confidentiality has been breached.

The policy also states that if a patient asks for information about his diagnosis, he should be referred to his physician. If anyone else should ask, he should be told that it is not our policy to divulge this information.

Although there is no evidence of any violation of confidence at Maine Blue Cross and Blue Shield, the policy ensures that with the continually increasing influx of claims, employees will have an understanding of how to handle confidential information.

County Society Notes

KENNEBEC

The Kennebec County Medical Association met at the Silent Woman Restaurant in Waterville, Maine on April 18, 1974. Following the social hour and a good dinner, the business meeting was conducted by the President, Dr. William E. Schumacher.

The minutes of the February meeting were read and accepted. (There was no meeting in March due to inclement weather.)

The secretary then read communications from the Maine Medical Association announcing that two members of the Kennebec County Medical Association, Drs. Arthur H. McQuillan and Francis H. Sleeper, would be honored by receiving their fifty-year pin at the June meeting of the Maine Medical Association. A letter from Maine Blue Cross and Blue Shield was read requesting nomination of a physician for the award presented by that organization.

Under new business, Dr. Heatly D. Sebring was duly elected to membership in the Association. Dr. Schumacher discussed the proposed revision of the bylaws which had been previously distributed to the members by mail. Final action on this matter will be taken at a later meeting.

Dr. Schumacher then introduced the speaker of the evening, Dr. Simmons Lessell, Professor of Ophthalmology at Boston University School of Medicine, who gave a stimulating and entertaining lecture on "Visual Disorders of Higher Brain Functions." He discussed the problems in diagnosing geniculocalcarine (cortical) blindness and the various types of alexia.

The meeting was adjourned at 9:35 p.m.

KEVIN HILL, *Secretary*

LINCOLN-SAGadahoc

A regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on April 16, 1974.

The meeting was called to order at 8:30 p.m. by the Vice-President, Dr. Ralph C. Powell. The minutes of the March meeting were read by the secretary and accepted as read.

Old Business:

Dr. Richard Evans, III moved that the Mental Health section of the proposed school health program be worded: "Psychological screening of all children and evaluation tests as indicated will be done as provided by (LD 965 State of Maine). If medical or psychiatric treatment or counselling seems indicated, it will be arranged conjointly among the parents, the school, the Mental Health Clinic school consult team and the child's pediatrician or family physician. Since the children and their capacities and needs are constantly evolving, as is the state of the art of treating and working with them, there is a need for regular and periodic communication and review among these four parties, not less than twice yearly." The motion was seconded and discussed. Dr. Carl R. Griffin, Jr. moved an amendment: "That parents of children being tested be informed of the results of the tests." This amendment was seconded and passed, with one opposing vote. The main motion as amended was passed with five opposing votes.

Dr. Powell then announced the speaker for the May meeting with wives and the fact that Mr. Merrill will receive a fee of fifty dollars.

Dr. John F. Andrews and Dr. Aldo F. Llorente mentioned that the Bath-Brunswick Mental Health Clinic plans to make progress reports on patients to referring physicians.

Delegates Reports:

Dr. Anthony J. Horstman recommended that reports of the interim session of the House of Delegates be postponed.

Dr. Robert S. Galen then introduced Dr. Stephen R. Klein of Portland, who spoke on "Subarachnoid Hemorrhage." His interesting presentation was followed by questions and terminated at 10:00 p.m.

Dr. Elihu York then asked for the floor and spoke on a partial

survey of mental health clinics made by a committee and presented to the Executive Committee of the M.M.A., but not acted upon by that body. He asked that members of this County Society express their views of mental health clinics to any future survey committee.

The meeting was adjourned at 10:06 p.m.

GEORGE W. BOSTWICK, M.D., *Secretary*

PENOBSCOT

The monthly meeting of the Penobscot County Medical Society was held on April 16, 1974 at the Twin City Motel, Brewer, Maine. The minutes of the March 1974 meeting were read and approved. There was no correspondence and there was no old business.

Under new business, application for membership in the County Society of Dr. James Conrad was presented after review and recommendation for approval by the Executive Council. The application from Dr. Conrad was unanimously approved by the membership.

Dr. Peter Emmett spoke briefly about the Drug Abuse Reporting Program. This is an effort to determine the extent of the drug problem in our area and to report the incidence of drug use and abuse as well as consequences thereof. There is no intent made to report the name of the individual or individuals involved in drug use. Reports of drug abuse should be made to Mr. William Shook, Bangor City Health Officer.

Dr. Frank Zorich discussed the new admission policy of the Bangor Mental Health Institute. He described three categories of admission through the hospital; namely, voluntary, suicidal, or homicidal, and lastly, harmful to one's self, but less than suicidal. He also mentioned the completion of the appropriate admission forms and the handling of the commitment application.

The main topic of the evening was a presentation by Dr. Robert Coon, Vice Chancellor, University of Maine. Dr. Coon addressed his remarks to the development of medical education in Maine as it applies to the new medical school. He presented background information of medical education across the country, and then as it applies to the State of Maine. The present status of Maine residents in medical schools contracted by the Legislature was discussed. The likelihood of acceptance into these seats was also mentioned. The potential for a medical education program in this State in order to attract and retain physicians that train within the State was discussed. It was felt by Dr. Coon that the program should be directed to the medical needs of the State of Maine and to family practice in particular. He outlined a potential plan whereby basic sciences will be contracted to out-of-state medical schools and the clinical years will be maintained within the State, utilizing existing facilities, with third-year being taken at the Maine Medical Center in Portland, and the fourth year at the major centers around the State. Dr. Coon plans the first class to be started in September 1975, to graduate in 1979. Following Dr. Coon's presentation, a question and answer session followed.

As there was no further business, the meeting was adjourned.

PHILIP G. HUNTER, M.D., *Secretary*

WASHINGTON

A regular meeting of the Washington County Medical Society was held on April 29, 1974 at the Conference Room in the Calais Regional Hospital in Calais, Maine.

Minutes of the last meeting were read and approved.

Discussion of various programs for Child Care; outline of present programs by Dr. G. Bernard Shaw; outline of new comprehensive program by Drs. A. Cowan Collins and Bryan Stone. This new comprehensive program will be written with the aid of Dr. Randall H. Silver, Pediatrician, Ellsworth, Maine. It will then be presented to Drs. Robert G. MacBride and James C.

Bates for over-view; then presented to the County Society for final discussion. It is hoped that this will prevent fragmentation which exists at the present. Dr. Collins said that we really needed an "overall coordinator" for these plans, since at present many physicians did not understand how to take advantage of the present plans and more particularly about methods of billing.

There was considerable discussion of the "Uniform Alcoholism and Intoxication Treatment Act," which will throw the brunt of treatment on the hospitals. It was generally felt that some of the hospitals were able to take care of the chronic alcoholics, but that generally they were not set up for the con-

tinued care. The physicians generally felt that the AA was doing a very good job, but lately, particularly in the Calais area, has not been as effective. Much of this was due to changes in personnel in the Counseling Center. The Counseling Center apparently has a different approach and the coordination between Counseling Center and AA, apparently lately has left something to be desired. It was hoped that something could be worked out to make treatment of the alcoholics more effective.

The next meeting to be at Dennysville, presumably at the home of Dr. A. Cowan Collins, with election of officers at this meeting.

KARL V. LARSON, M.D., *Secretary*

THE ROLE OF THE FAMILY PHYSICIAN IN THE DIAGNOSIS AND TREATMENT OF CANCER

Continued from Page 244

to encourage early detection and to reassure patients that they will receive proper attention and investigation of their signs and symptoms when they do come in.

5. The Family Physician should be in constant contact with the patient, the surgeon, the radiotherapist and the oncologist. This intercommunication is extremely important for the welfare and successful treatment of the patient; to see that care is ongoing, that patients are not lost in the shuffle be-

tween different succeeding therapies; to give the patient strength and a boost in morale and hope for a successful outcome; to give support and courage to the terminal patient and his family.

6. The physician should be aware of the services offered by the Cancer Control Dept. of the Maine Dept. of Health & Welfare especially for patients far removed from large centers.

7. Lastly, the physician should get acquainted with the Maine Chapter, American Cancer Society

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in Brunswick, Maine. They have a great deal to offer in the way of prevention, early detection and treatment of cancer. The agency can be helpful to the physician and provide many things for the cancer patient especially after he leaves the hospital.

Finally — a word on the role of the physician-patient relationship in family practice and cancer. As a rule, the family doctor feels close to his patients. He has known them for many years and usually has known their parents and their children, their personalities, characters, susceptibilities, etc. This relationship tends to make the doctor dread the

possibility of the existence of a cancer in one so close to him. It is almost like an extension of "this can't happen to me" syndrome. Hence, the family doctor must be extra persistent in ruling out malignancy in his patients. For the same reason, the discovery of inoperable cancer in one of his patients is traumatic to the family physician and he shares the grief and the suffering of his patient to a considerable degree.

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DRUG THERAPY REVIEWS: RATIONAL USE OF PSYCHOTROPIC DRUGS III. MAJOR TRANQUILIZERS

Continued from Page 256

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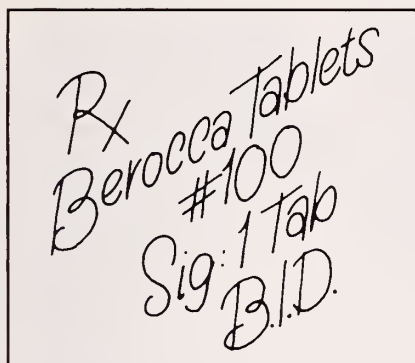
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The Journal of the Maine Medical Association

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Number 11

A 10-Year Experience With Multiple Myeloma At The Veterans Administration Center, Togus, Maine

PAUL H. PFEIFFER, M.D.*

In 1846, Dalrymple¹ described an illness characterized by "mollities ossium" (soft bones) with "animal matter" in the urine. Two years later Bence-Jones² showed that the "animal matter" was a modified protein and in 1900 Wright³ demonstrated the proliferation of plasma cells in the bone marrow. Since the 1950s, numerous studies have documented the abnormal proteins produced by the plasma cells.

CLINICAL MATERIAL

Since January 1964, there have been ten patients diagnosed at this Center as having multiple myeloma. There is scanty information on most of these due to the fact that they arrived at the hospital moribund and died before much information could be obtained or else the patient's disease has been diagnosed only recently.

These patients were all male with an average age of 65.7 years, the youngest being 52 and the oldest 80, with the majority in the 60s. Waldenström,⁴ in Sweden, found the largest group of patients were between 70 and 80 years old and 42% were over 70. In most series, the sex ratio is 56 males to 44 females.

Brief summaries of the outstanding features of nine of these cases are as follows; the records on one case not being available for analysis:

Case 1: I. K., an 81-year-old man, with arteriosclerotic heart disease, chronic brain syndrome, and alcoholism had a carcinoma of the rectum removed six years previously with no evidence of recurrence. Two years prior to this admission he was

first noted to have an IgG gammopathy, and one year ago multiple myeloma was diagnosed on bone marrow examination associated with an L chain IgD or IgE gammopathy. The cold agglutinins were positive at 1:128 but the myoglobulins were negative. There was no protein in the urine. The BUN was normal and a test for Bence-Jones proteins was negative. X-rays of the chest revealed no bony involvement. X-rays of the skull showed multiple small radiolucencies. The patient has been living as an invalid in a nursing home for the past two years without receiving any specific treatment.

Case 2: G. R., a 62-year-old man, was admitted on May 17, 1970 and died on June 3, 1970. His bone marrow was diagnostic of multiple myeloma associated with an abnormal immunoelectrophoretic pattern with IgG 3,400 mg. per ml., IgA 150 mg. per ml. and IgM 35 mg. per ml. The urine contained 4+ protein, the BUN was 120 mg.% with a creatinine of 15 mg.% and the Bence-Jones protein was not examined. He died of a staphylococcal pneumonia.

Case 3: W. C., a 75-year-old man, was admitted on Aug. 28, 1971 because of back pains due to compression fractures of the spine and he expired on Nov. 1, 1971. The bone marrow was consistent with multiple myeloma. There was a monoclonal peak and a 400% increase in the IgG protein. In spite of a small amount of circulating L chain in the serum, the test for Bence-Jones protein was reported as negative. The BUN was 150 mg.% with a creatinine level of 15 mg.%. He received cobalt treatments to the spine and 6 mg. daily of melphalan (Alkeran®) without significant response.

Case 4: P. J., a 64-year-old man, expired on May 9, 1966 of a pneumococcal pneumonia. In November 1959, he presented himself with an intramedullary mass in the body of the sternum. The body of the sternum was excised, and the mass proved to be a plasmacytoma. The electrophoretic pattern at the time suggested myeloma and reverted to normal after the sternum was excised. Six months after operation a subcutaneous mass was removed from the glans penis which proved to be a plasmacytoma. In November 1962, masses appeared in the fibula and elbow which were biopsied and contained plasma cells. The electrophoretic pattern had again become abnormal consistent with myeloma. It remained so until 1964 when treatment with melphalan, 2 mg. per day, was started after which it again re-

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verted to normal. The patient was unable to tolerate a larger dose due to bone marrow depression. A positive test for Bence-Jones protein was first noted in 1965. At autopsy, as well as the healed bony lesions there was a large retroperitoneal plasmacytoma involving the pancreas, kidneys and adrenals.

Case 6: A. T., a 76-year-old man, was admitted on Oct. 6, 1964 and died on Feb. 7, 1965. A bone marrow and electrophoresis (monoclonal gammopathy in alpha-2 area) were consistent with multiple myeloma. He did not respond to urethane or cyclophosphamide.

Case 7: J. D., a 53-year-old man, was admitted because of bone pain, anemia, and a 46-pound weight loss. A metastatic series showed osteolytic lesions consistent with multiple myeloma and the electrophoretic pattern confirmed this. Taking melphalan, 6 mg. per day, he was relieved of pain but died after one month of treatment. The immediate cause of death was pneumococcal pneumonia.

Case 8: W. G., a 68-year-old man, was given the diagnosis of multiple myeloma on the basis of a pathological fracture, characteristic osteolytic lesions, a bone marrow packed with plasma cells, and an electrophoretic monoclonal spike with a 50% gammopathy. He received urethane, 1.0 gram per day, with sodium flouride from January 1964 to June 1965 when he died of a pneumococcal pneumonia.

Case 9: A. A., a 52-year-old man, was admitted in October 1964 because of back pains and a spastic paraplegia. At laminectomy, a spinal cord tumor was found which proved to be a plasmacytoma. Bence-Jones protein test was negative. The bone marrow was consistent with multiple myeloma and a serum electrophoresis was normal. Melphalan, 6 mg. per day, was started but could not be continued due to bone marrow depression. He also had irradiation to the spine. He died on March 9, 1965.

Case 10: N. P., a 54-year-old man, with chronic schizophrenia, was admitted in January 1974 with signs of pneumonia and empyema. His bone marrow was consistent with multiple myeloma. There were no bone lesions. Bence-Jones test was negative and there was a transient rise of the BUN to 110 mg.% with a creatinine of 2.5 mg.% which returned to normal. The electrophoretic pattern contained a monoclonal spike which decreased after four days of treatment with melphalan, 12 mg., and 80 mg. of prednisone daily. His course has been complicated by persistent hydropneumothorax in spite of drainage using a chest catheter. The plan is to repeat the above melphalan-prednisone treatment at six-week intervals.

DISCUSSION

Multiple myeloma is a neoplastic proliferation of plasma cells characterized by anemia, osteolytic bone lesions or osteoporosis, monoclonal peaks among the gamma proteins on electrophoresis and occasionally light chains (Bence-Jones protein) in serum and urine. In the total U. S. population, the incidence of abnormal spikes on electrophoresis is 0.9% which increases to 3% after the age of 65. However, the actual mortality in the U. S. from the myeloproliferative disorders affecting plasma cells is 1.7 per 100,000 (.0017%).

As for the etiology, heredity appears to play a role and families have been described with a higher than expected incidence of M components in their serum. It is possible that the neoplastic cell proliferation might be related to an inappropriate response to an antigenic stimulus.⁵ Virus-like particles have been implicated and in susceptible mice plasma cell tumors have been produced by the injection of lucite or mineral oil.⁶

The serum proteins range from the large slow-

moving gamma globulins, the beta globulins, alpha₁ and alpha₂ globulins, to the smaller faster-moving albumins. By means of immunoelectrophoresis, it is possible to identify five main types of immunoglobulins. Their labels and serum concentrations are as follows: IgG, 700-1,700 mg./100 ml.; IgA, 70-350 mg./100 ml.; IgM, 70-210 mg./100 ml.; IgD, 3 mg./100 ml.; and IgE, <0.3 mg./100 ml. They possess different properties. The IgG fraction contains antibacterial, antiviral, and antitoxic antibodies. IgA is the antibody which is found in secretory fluids. IgM possesses the natural antibodies including the blood group antibodies, cold agglutinins, rheumatoid factors, antibodies to gram negative organisms, and others. IgD has an antibody function which remains to be elucidated (1970). IgE contains antibodies which elicit the Prausnitz-Küstner reaction and are important in asthma. The immunoglobulins consist of four polypeptide chains linked by disulfide and hydrogen bonds. Two of the chains are light (molecular weight 20,000 to 25,000) and are classified as K or L. The heavy chains have molecular weights of 50,000 to 70,000 and are classified as gamma, alpha, mu, delta and epsilon. The so-called M-spike of multiple myeloma or monoclonal (rarely biclonal) gammopathy, refers to an abnormal peak usually at the gammaglobulin end of the electrophoretic pattern and this may consist of IgG (54% of the cases), IgA (22%), IgD (<1%), and IgE (<1%). In approximately 2% of the cases of multiple myeloma, there is no excess protein production. In Waldenström's macroglobulinemia, the serum abnormality consists of IgM globulin. Approximately 20 per cent of the patients diagnosed as having multiple myeloma show Bence-Jones proteinuria.

The recommended treatment for multiple myeloma is to administer melphalan (Alkeran®) 0.25 mg./Kg. and prednisone 2.0 mg./Kg. daily for four days, wait six weeks, and then repeat. This is continued as long as the patient lives unless further treatment is precluded by extreme bone marrow depression. Alexanian⁷ reported in 1970 on a series of 140 patients that their survival time was extended six months by using melphalan in combination with prednisone compared to melphalan alone and that whereas untreated patients survived an average of 9 to 11 months the treated patients have a median survival of 24 months.

The major causes of death in multiple myeloma are: Bone marrow failure (35%), immunoglobulin failure (32%), renal failure (11%), hypercalcemia (10%), spinal cord compression (7%), and unrelated diseases (5%). In the differential diagnosis of multiple myeloma, one should consider hyperparathyroidism because of the occasional finding of tiny punched-out bone lesions, elevated calcium, and frequently associated renal disease. Confusion frequently results when a monoclonal gammopathy

is discovered without any of the other features of multiple myeloma. This is usually due to Waldenström's Disease, characterized by non-specific symptoms of chronic disease as well as arthralgias, Raynaud's phenomenon, lymphadenopathy, splenohepatomegaly, bone marrow infiltration with small lymphocytes, and a monoclonal gammopathy usually of the IgM variety. The prognosis is better than with multiple myeloma and an average life expectancy is 38-40 months from the onset of symptoms. There is one variety which Waldenström has labeled "benign monoclonal gammopathy" which may go on free of symptoms for many years although some cases eventually develop the more malignant forms of the gammopathies.

The serum hyperviscosity syndrome is a frequent complication of macroglobulinemia because viscosity responds more acutely to elevations of IgM than to those of other globulins. Above a concentration of 2 grams % of IgM the relative viscosity rises steeply. Symptoms of this condition are: Bleeding, retinal hemorrhage, vertigo and peripheral neuropathy. Effective treatment is plasmapheresis, two to four units weekly or biweekly. The normal range of relative viscosity of serum is 1.4 to 1.8. Symptoms begin when this level reaches 4 and most patients are found to have levels of 7 to 8. Hypercalcemia is frequently associated with multiple myeloma and seems to respond to corticosteroids.

Related conditions of clinical interest are cryoglobulinemia,⁸ the serum hyperviscosity syndrome,⁹ pyroglobulinemia,¹⁰ primary systemic amyloidosis,¹¹ cold-agglutinin disease,¹² lichen myxedematosus (scleremyxedema),¹³ and pyoderma gangrenosum.¹⁴ There are also the heavy and light chain diseases.

Bence-Jones proteinemia and proteinuria is an example of a disease characterized by abnormal formation of a light chain. It is often associated with renal failure and the so-called myeloma kidney. There are also the heavy chain diseases which form three major groups: 1.) Gamma,¹⁵ characterized by fever, general malaise, susceptibility to infection, hepatosplenomegaly and lymphadenopathy. 2.) Alpha,¹⁶ whose victims so far have all come from the Mediterranean area, North Africa, Far East, or South America and who present with malabsorp-

tion syndrome and abdominal lymphoma. 3.) Mu,¹⁷ which is a disease resembling chronic lymphocytic leukemia.

SUMMARY

Over the past 10 years, 10 patients with multiple myeloma have been seen at the Veterans Administration Center, Togus. Brief summaries of the malignant course these disease pursues are presented. Related conditions are described as well as some of the unusual features of the macroglobulinemias.

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Carcinoma of the Prostate Gland Revisited

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OLD ORDER CHANGETH

While we have no figures to offer, it can be stated with conviction that during the years we have been at Togus we have seen a great number of patients with carcinoma of the prostate — most of whom have been in the advanced stages. In a small number, we were able to carry out the radical excision. There is a changing philosophy in the treatment of this disease which of necessity is compelling urologists and others who have occasion to treat such patients to review the entire subject in the quest of a new rationale for advising, medicating and operating upon these patients. To this end we have scanned, combed, compared and compiled the opinions, experiences and conclusions of some of the leading lights in urology and radiology. In what follows, we will try to present the current state of affairs and the options of decisions it offers. We have tried to avoid lists of statistics and tables favoring instead a look at the overall scene.

Until recent years, most urologists felt that despite many unknowns the accepted treatment for prostatic cancer was fairly well defined: About 5% of the patients could be subjected to radical prostatovesiculectomy in the hope of cure in the absence of evidence of dissemination and with a lesion well-confined within the prostatic capsule. With more refinement in selection as well as some latitude in criteria and the use of estrogen, this limit was extended to 20% and possibly more among the civilian population.^{1,3,18} With annual Army physical examinations at Walter Reed Army Hospital, this figure has been as high as 50-60%.^{19,36} The rest of the patients were treated by early or late orchiectomy, or estrogen, or both. Where obstruction was not relieved by such therapy, a transurethral resection of the gland was carried out. This remains a very frequent operation.

The experiences of the last few years have brought about a turbulence from the encounter of the prevailing winds of the established views and practices and the crosscurrents of the newer concepts of the nature of the disease and its treatment. The past management of the treatment of prostatic cancer is questioned and challenged bluntly. One might almost say that it is a matter of going "back to the drawing board" and admitting that we do not know as much as we thought we did. There is controversy and the inevitable confusion.

HISTORICAL

A brief look at the past can be helpful in appre-

ciating the present mix of opinion and the direction of the immediate future. That atrophy of the prostate gland follows castration was recognized as far back as 1786. About 1865, prostatic cancer was identified as an entity and its metastases were first noted and reported by Von Recklinghausen about 1891. By 1900, physicians were apparently aware of this carcinoma as a formidable cause of death in men. In the late 1800s, attempts were made to remove the gland radically but the death toll was prohibitive. It was in 1904 that Hugh H. Young introduced his relatively safe perineal radical excision. Postoperative survival was exceptionally good but incontinence was a major complication until later refinement of the procedure reduced that complication substantially.

In 1935, the enzyme acid phosphatase was found to be excreted abundantly by the prostatic epithelium and present in prostatic fluid. Its presence in the blood stream of patients with metastases was discovered in 1938. In the early 1940s, Huggins ushered in the era of endocrine therapy for the relief of the pain of bone metastases and for the softening and reduction in size of the prostate with castration and estrogen. Significant later findings were that about 20-30% of patients did not respond and when relapses occurred after some months or a few years further use of endocrine measures including androgen, corticosteroids and progestational agents were unlikely to reverse the picture.² Some cells in the prostate are thought to be or become independent of androgen, activate the growth, and cannot be influenced by estrogen.^{14,23} The recognition of the adrenal glands as a second source of androgen after castration with the hypophysis serving as the stimulating factor for the production of androgen by the testes and adrenals provided the rationale for adrenalectomy and hypophysectomy^{4,5} in the treatment of relapses. These procedures have not achieved common application and the recorded survivals are generally brief and both continue as subjects of investigation. "Medical adrenalectomy" has been attained by the use of cortisone and a modified "hypophysectomy" has been created by the introduction of ⁹⁰Yttrium into the pituitary intranasally.³⁴

Concomitant with these developments in hormone therapy the surgical technique of radical prostatectomy by the perineal route was partly supplanted by the introduction of the retropubic approach. One advantage of the latter is that it permitted examination of the pelvic lymph nodes and their dissection when appropriate.^{11,20,25}

Radiation therapy preceded the hormonal era. It

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came upon the scene as radium via a urethral catheter. By 1915, the use of radium, and later its decay product radon, intraprostatically was underway.²⁰ The early 1950s saw further the direct introduction interstitially of new radioactive isotopes in addition to the known ²²²Radon. Flocks used radioactive gold ¹⁹⁸Au,⁶ ³²Phosphorus,⁷ ⁹⁰Yttrium,⁸ ¹⁹²Iridium, and ¹²⁵Iodine⁹ followed. ³²Phosphorus was used intravenously alone or in conjunction with testosterone. The latter enhanced the affinity of bone for phosphorus which was required for new bone formation. The radioactive phosphorus was taken up by the actively growing cancer cells in the metastatic areas which resulted in the palliation of pain.^{10,17} During this same period, conventional x-ray beam was used for the relief of pain of bone metastases. The advent of supervoltage radiation with its minimal morbidity and surface effects and its favorable maximal high dosage with deep concentration in target areas opened wider than ever the field of radiation therapy with the hope of attaining cures.¹⁴ Today it is one of the most intensely applied and investigated therapeutic tools though not free of controversy.

The need for biopsy proof of the presence of carcinoma is self-evident. The rectal finger alone was not a sufficient basis for operation or conservative treatment. The open perineal prostatectomy permitted removal of tissue directly from the gland. If the frozen section was interpreted as positive, the operation was carried out to its objective of radical excision. During the 1930s, needle biopsy came into vogue first as an aspiration and later with a cutting blade arrangement in the needle. The needle was introduced either by the transperineal or transrectal route, the latter offering a somewhat more precise traversal of the lesion by the needle. The advantage of the needle biopsy was that it could be repeated and if an early lesion was discovered, the radical operation could be done electively. Further, it provided a histologic section stained in the conventional manner offering a more certain interpretation by the pathologist in contrast to frozen sections.

INCIDENCE

Justification for the zealous efforts in the treatment of prostatic carcinoma is found in its prevalence. Its presence at autopsy is significantly higher than its clinical discovery. Whitmore¹¹ speaks of the incidence pathologically as 100 times greater than the clinical. In 1967, it was considered the second largest cause of death in males. Today it is held to be the leading cause of death in men over 75. Men over 70 have a probability of almost 50% of having prostatic cancer.²⁴ As the ninth decade is approached, this figure becomes 80% and at 90 it becomes 90%.¹² Lattimer²⁵ has labeled it "the great widowmaker." Another facet of its ubiquity is the slow-growing latent lesion of which it has been said

one may die with it rather than of it. Whitmore¹¹ indicates that anywhere from 10 to 50% of patients with such a subtle, almost inert focus, die of other causes. It is considered by some as part of the aging process in men,¹² but we are reminded that some of these patients will at some point have "late" cancer if they don't die of something else.^{14,15,24} There is also the paradoxical impression that its discovery in younger men is more grave than in men over 75.^{13,14}

CLASSIFICATION

As for other neoplasms, methods of descriptions of the progression of prostatic carcinoma have evolved. Most commonly used is the system in which *Stage A* represents the *small* microscopic lesion discovered incidentally as a result of a transurethral resection or open prostatectomy, undetectable by rectal examination. If the lesion proves to be diffuse, it is not Stage A. It is often an autopsy finding. *Stage B* denotes a palpable lesion by rectal finger examination, well within the prostatic capsule, without metastasis, with a normal serum acid phosphatase. *Stage C* describes palpable extension beyond the confines of the capsule into surrounding structures without metastases and with normal serum acid phosphatase. *Stage D* denotes evidences of metastases with or without an elevated serum acid phosphatase. The other system uses Roman numerals I, II, III, IV which correspond to A, B, C, D but without reference to the serum acid phosphatase in II and III.

THE CONTENTS OF CONFUSION

The currently aroused division in the camp over carcinoma of the prostate is derived from its pathological, clinical and therapeutic uncertainties as well as voids in knowledge. Why a uniform policy of treatment has not been achieved may be seen in the nature of the many factors that have confronted the physician seeking to direct his best effort on behalf of his patients. Prostatic cancer is a totally unpredictable disease in its natural history. Herein we cite some of these factors which are not necessarily in a logical sequence but are nevertheless related: Variation in host resistance. The inadequacy of the rectal examination alone as a basis for staging in view of the recognized tendency to underestimate the extent of the lesion.^{11,15,25} The variation in grade of the encapsulated lesion within the prostate and the production by some small lesions of metastases²⁸ which may not be detected by the usual metastatic bone series or even the scan. The metastases in bones and lymph nodes which may be accompanied by a normal serum acid phosphatase.^{11,16} The nodule which is not a carcinoma¹⁹ and the soft prostate which is carcinomatous.²⁸ The false negative biopsy. The discovery of carcinoma in tissue obtained from transurethral resections and simple

prostatectomies in patients operated upon for "benign" prostatic hypertrophy.¹⁵ The problem of correlation of grade and clinical stage in the face of evidence that they may not always coincide.^{14,20} The quandary of reconciling the course of the slow-growing latent lesion which permits long survival and the flagrant galloping disease which kills rapidly. The doubt that today there is any modality of treatment that can completely remove or destroy the carcinoma cells.³⁰ The variation in androgen dependence and the resulting lack of response to estrogen or orchiectomy by some patients. The failure of further prominent benefit from endocrine therapy in the presence of a relapse of symptoms.^{2,23} The lack of assurance that any form of treatment will prevent the appearance of metastases. The physician's dilemma in choosing between "watchful waiting" and immediate treatment.^{14,15,24} The observation that like the latent small lesion B Stage patients may not progress to Stage C and that some patients may progress no further.¹¹ Finally, the fact that the radical procedure in younger men produces impotence and exposes them to possible incontinence.

THE UPSET APPLE CART

The established views have been disturbed in two major areas. The first is the slowly dawning impression expressed by an increasing number of authors that there appears to be no advantage in the radical excision of the prostate gland in the earlier type of lesions. They have a suspicion that the long survivals of a substantial number of patients subjected to the operation for ten, fifteen or more years is not necessarily to be credited to the operation.^{11,26,27} The contention is that these patients would have survived anyway with conservative treatment¹⁵ consisting of doing nothing and watching them on a regular basis until symptoms appeared warranting treatment. Others advocate starting treatment when periodic examination denotes an advance from one stage to the next. Treatment may consist of orchiectomy or estrogen or both or high energy beam radiation or interstitial radiation. The prominent argument against the radical procedure is that there are no indisputable and dependable series of patients who have had other than the radical operation for early lesions to serve as controls.^{11,27}

The second point relates to the hormone therapy itself. Doses of 25 and even 100 mg. and more of diethylstilbestrol daily over a long period were not uncommon in the past. The Veterans Administration cooperative studies²⁹ have shown that a dose even as small as 5 mg. daily in older patients with advanced disease was sufficient to cause cardiovascular death detailed as heart disease, cerebral vascular accidents, and pulmonary embolism. It has been hypothesized that sodium retention and possible alterations in the clotting mechanisms may

be involved. Under such circumstances, the benefits of hormone therapy were outweighed by the mortality it caused. A 1 mg. dose administered daily only when symptoms appear is now considered adequate for the expected benefits of hormone therapy.

Less boggling has been the extension of the use of supervoltage radiation therapy. As we noted in the historical background, the use of radiation is hardly new but with the advent of high energy radiation treatment has now been applied not only to advanced patients but also to those with early lesions.^{1,11,14} The latter represents a distinct break with the past.

Despite what we have related above, it is evident that many authors are still convinced that there is nothing that offers a chance for cure for the small focal lesion more than the radical prostatovesiculectomy and that survival is not to be equated with cure.^{15,16} That the VA studies need further confirmation has been expressed and radiologists themselves have expressed doubt that radiotherapy will prove to be curative¹⁴ or significantly better than endocrine treatment or the radical procedure.³⁰

THE PRESENT TRENDS

In view of the awareness of the need to learn more about prostatic carcinoma in order to checkmate it, the avenues of endeavor to this end are now shaping up as follows: Pathological reports will state more than "adenocarcinoma"^{15,16} but will define grade in the attempt to correlate it to prognosis.^{11,14,20,27,28} Further, more operative tissue specimens will be sectioned from transurethral prostatectomies and enucleated tissue from simple prostatectomies will have more stepped sections for microscopic study to disclose carcinoma which might otherwise be missed.²⁴ An attempt will be made to obtain more information from lymphangiography by refinement of its technique and interpretation.^{14,20} The role of immunity will be investigated more intensely as is being done concurrently for other neoplasms. The possible role of viruses in carcinoma of the prostate will be pursued further, particularly because of an apparent correlation between the men who have it with the high incidence of breast cancer found in their wives.^{25,33} More bone biopsies will be done¹¹ along with simultaneous estimation of serum acid phosphatase and bone marrow acid phosphatase²⁵ to detect evidences of metastases before they are visible on x-rays or even bone scans. The bone marrow acid phosphatase is higher than serum acid phosphatase when the disease has begun to disseminate.^{31,32} There will probably be more serial estimations of serum acid phosphatase and plasma testosterone^{11,37} to determine the efficacy of anti-androgenic therapy. There will be greater use of high voltage radiation therapy^{1,11,14,17} as well as interstitial radiation therapy^{9,11} where facilities are available and its application in early lesions in

younger men will be watched closely not only for its effect on survival but its influence on sexual function, bearing in mind that the radical surgical excision means complete impotence.^{14,30} As mentioned before, the warning is sounded that radiotherapy may not prove to be curative and ultimately no better than the other conservative measures.^{16,20,25} More follow-up biopsies will be carried out to determine the destruction or continued existence of carcinoma cells following radiation.^{16,20,30} More cooperative studies will very probably be made and case recording will be more precise as to criteria to allow ideal comparisons of the series of the various investigators. Particular attention will be paid to patients treated by conservative methods to contrast against those having radical prostatectomy to obviate the present complaint that suitable control studies are not available.^{11,27} Finally, new therapeutic agents will be tried as they come upon the scene.

TREATMENT OPTIONS^{1,2,11,14,15,16,17,20,22,25,29,35}

We noted in the opening paragraphs that many physicians will for very practical reasons continue treating patients as in the recent past. Others, while fully acknowledging that there is still an inadequate basis for precise treatment programs will nevertheless subscribe to the newer views and trends. It is not possible to make a decision on therapy from any one author's beliefs and practices. By assembling the opinions and prescriptions of some of the leading urologists and radiologists who have set forth their views, it is possible to outline the options of treatment suggested:

Stage A: The very small lesion incidentally discovered following a transurethral prostatectomy or simple prostatectomy.

(a) No therapy. The patient is to be watched every six months. If there are untoward developments he should be reclassified and treated as for Stage C and Stage D patients, below.

(b) External beam radiation especially in younger men and in poor risks.

(c) Radical excision for the smallest lesions in good risk patients having a potential survival of 10 years; generally not in men over 70. Before this is decided upon, the patient must request the operation after being given choice of no therapy until symptoms appear, radiation therapy, early use of estrogen or orchiectomy or both. It is recognized that some patients cannot bear the thought of harboring a cancer and will want it removed.

Stage B: This lesion is detectable by rectal examination, generally small, well-confined within the capsule and with a fairly mobile gland, with no evidences of metastases and a normal serum acid phosphatase.

(a) No therapy until symptoms arise, then use estrogen or orchiectomy or both.

(b) Radical excision for the small lesion and if the patient requests it after considering the choices given above for Stage A.

(c) External radiation therapy for the larger lesions especially in poor risks.

(d) Early endocrine therapy, preferably orchiectomy.

(e) Interstitial radiation with isotopes by retropubic or perineal route. If retropubic, pelvic nodes can be examined and dissected.

Stage C: The lesion has extended outside the capsule, no evidences of metastases, and a normal serum acid phosphatase.

(a) No therapy until symptoms appear as above.

(b) Early orchiectomy or estrogen or both.

(c) External radiation therapy including pelvic nodes.

(d) Interstitial radiation for the larger lesions, introduced retropubically, and combined with lymph node examination and dissection.

Stage D: Evidences of dissemination.

(a) No therapy until symptoms appear.

(b) External radiation to the prostate, pelvic and abdominal lymph nodes and even the mediastinal and supraclavicular nodes.

(c) External radiation for localized bone pains, urinary symptoms, obstruction and bleeding. (No external radiation for generalized pains.)

(d) Orchiectomy or estrogen or both.

There is no complete agreement as to the virtue of orchiectomy versus estrogen alone. There are advocates for both sides. Orchiectomy has the advantage of not requiring a daily pill, avoids gynecomastia and its pains, the tendency to anemia and possible cardiovascular effects. When given, estrogen in the form of diethylstilbestrol, 1 mg. daily, is used.

(e) Other agents: Despite what has been stated in previous paragraphs, when the patient seems to have no response to endocrine therapy or has a relapse after previous benefit, one may still resort to a number of measures which may bring relief in some patients. These include the following:

1. Diethylstilbestrol diphosphate (Stilphostrol®) intravenously up to 1000 mg. daily over a period not to exceed five days.

2. Progestational hormones such as medroxyprogesterone (Provera®), hydroxyprogesterone (Delalutin®), or Cyproterone.

3. Testosterone.

4. Cortisone.

5. ³²Phosphorus intravenously with adjuvant testosterone.

6. Chemotherapeutic agents with potential significant toxic complications mentioned for completeness although not widely used: Nitrogen mus-

tard intravenously, Thiotepa® locally injected, 5-Fluorouracil® with or without Cyclophosphamide, Adriamycin (anti-tumor antibiotic).

For all stages: When there is obstruction not otherwise relieved, transurethral (TURP) is still done as in the past.

SUMMARY

There is a changing philosophy in the treatment of carcinoma of the prostate gland. From the radical prostatovesiculectomy for the few patients with a well-encapsulated lesion without metastases and orchiectomy or estrogen therapy for the rest, there is now a vigorous swing to the contention that the radical operation is probably unnecessary and not superior to conservative therapy. The latter seems to result in equal survival although this is unsupported by adequate numbers of unoperated patients for comparison at this time. Another change in view relates to the use of estrogen which is alleged to cause deaths from cardiovascular mishaps when given to patients with advanced disease in doses larger than 1 mg. daily as diethylstilbestrol. Furthermore, estrogen therapy is not to be used until symptoms justify it. Current trends include endeavors toward a more precise diagnosis with more careful grading, correlation of grade to clinical stage, more bone biopsies, and comparisons of serum acid phosphatase to bone marrow phosphatase for early evidence of metastases before routine bone x-rays and scans can demonstrate it. There is increasing use of high energy radiation therapy as an alternative to the radical excision in early cases and for the treatment of metastases to the lymph nodes in the advanced cases. Finally, a treatment program with latitude is outlined representing the newer views and practices of leading investigators with particular reference to the earlier lesions.

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"Hairy Cell" Leukemia

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"Hairy cell" leukemia¹ is a descriptive name given to a rare entity which is also called leukemic reticuloendotheliosis² (LRE), histiocytic leukemia, or chronic reticulolymphocytic leukemia.³ The origin of this neoplastic cell is unknown despite continuing investigation over the past 15 years. Since the condition is not well recognized and has been confused with chronic lymphatic leukemia (CLL) and lymphosarcoma, this case is reported together with a brief review of the literature.

CASE REPORT

G. T., a 50-year-old white male painter, was referred to this hospital on March 10, 1972 because of pancytopenia which had been noted while under treatment for pneumonia. Two attempts at bone marrow aspiration had been unsuccessful. There was no history of exposure to toxic agents or to the use of alcohol. The past history was uneventful. A review of the family history revealed that both parents had died of cancer and that one son had died of leukemia. The physical examination was not remarkable. The liver edge was just palpable below the right costal margin. The spleen and lymph nodes were not palpable. Laboratory studies disclosed the following values: Hemoglobin (HGB), 13.0 grams; hematocrit (HCT), 41%; WBC count 4,180, with 21% neutrophils, 75% lymphocytes, 1% eosinophils, and 3% monocytes; Platelet count 172,000 (indirect method). Biopsy of the posterior superior spine of the ilium was performed with the Jamshidi needle because of the history of unsuccessful bone marrow aspirations. The smears were less than average in cellularity. The cells of the myeloid series were decreased and there was an increase in lymphocytes. Histologic sections of the biopsy showed normal cellularity but with decrease in granulocytes.

He was admitted on March 22, 1973 for follow up studies at which time he stated that he had no symptoms. Physical examination disclosed that the tip of the spleen and the edge of the liver were palpable and there was slight enlargement of the cervical, axillary, and inguinal lymph nodes. Laboratory studies during this admission revealed the following: HGB, 11.8 grams; HCT, 36%; WBC count 10,900, with 4% neutrophils, and 96% lymphocytes; aspiration of sternal marrow was performed with some difficulty. These smears were reported as showing pancytopenia.

He was next admitted on March 7, 1974 complaining of fatigue and shortness of breath. The liver edge was now palpable two fingerbreadths below the right costal margin and the spleen five fingerbreadths below the left costal margin. There was no further lymph node enlargement. Laboratory studies were as follows: HGB, 6.1 grams; HCT, 19%; WBC count 14,600; platelet count 88,000. Smears of the peripheral blood showed the erythrocytes to vary markedly in size and shape; Normoblasts and Howell-Jolly bodies were seen. The differential count of leukocytes:

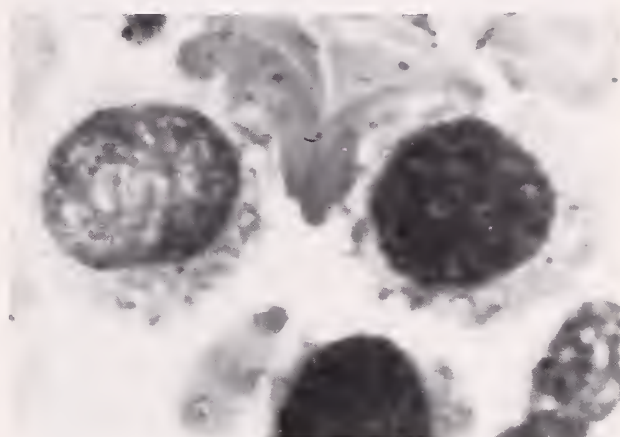


Fig. 1. "Hairy" cells in peripheral blood X 1000.

neutrophils 7%, lymphocytes 25%, and larger mononuclear cells 68%. Bone marrow aspiration from the sternum was performed; smears of aspirated marrow were of less than average cellularity. There was a marked decrease in cells of the myeloid and erythroid series. Megakaryocytes were decreased. About one-third of the marrow cells were abnormal cells identified as LRE cells or "hairy cells" similar to those seen in the peripheral blood (Fig. 1). Review of the previous bone marrow smears and smears of peripheral blood showed that these cells were present in both previous examinations.

Peripheral blood cells were subjected to cytochemical studies according to the following procedures:

Air dried smears of buffy coat cell preparations were fixed according to the method of Barka and Anderson.⁴ The presence of acid phosphatase and its L(+) tartaric acid resistant isoenzyme was demonstrated using the procedure of Yam, Li, and Lam.¹²

In order to further confirm the morphologic findings obtained from light microscopy cells for scanning electron microscopy were grown on 22 mm x 22 mm cover slips in a basal growth medium previously reported⁵ and supplemented with 10% horse serum, 5% fetal calf serum, and 5% of the patient's serum obtained from heparinized blood. Cover slips were placed in Falcon 60x15 mm plastic culture dishes, covered with growth medium and incubated in a water-saturated atmosphere of 95% air and 5% carbon dioxide at 37° C. The method of adaptation of these cells to in-vitro culture conditions will be described elsewhere. Subsequent to cell attachment the medium was removed and the cover slips gently rinsed with phosphate buffered saline. Fixation was with 2% glutaraldehyde in Millonig's buffer⁶ for 3 hours at 37° C. Following fixation, glutaraldehyde was removed by dilution with de-ionized water and dehydration carried out stepwise with absolute ethanol. After a period of air-drying, the cover slips were placed over Silica Gel[®] desiccant (Tel-Tale, Davison Chemical, Baltimore, Maryland). Prior to viewing, the specimens were metallized with gold-palladium (60:40 w/w) (Fig. 2).

DISCUSSION

Bouroncle² in 1958 reported 26 cases of what he called LRE. This term was first used by Ewald in

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Fig. 2. A cluster of three "hairy" cells derived from peripheral blood cultured and prepared as described in the text. Viewed at 45° by scanning electron microscopy X 3000.

1923 describing a case of leukemia which is now believed not to be the same as the case under discussion. Later the descriptive term "hairy cells" was applied because of the uncertainty of origin of these cells.¹ The cases of this entity (over 170 reported to date) are characterized by a distinctive clinical course and unique appearance of the neoplastic cell. The onset is insidious, frequently manifested by pneumonia. The course of the disease is chronic and indolent with survival up to 15 years recorded. Males predominate 4:1 and the age at onset ranges from 30 to 70 years. Splenomegaly is almost always present when the patient is first seen and is always noted during the course of the disease. Hepatomegaly has been noted in about 50% of the cases but lymphadenopathy is absent or minimal.

Hematological findings at the time of diagnosis include a moderate anemia, neutropenia, and thrombocytopenia. The total white blood count may be normal or decreased but is rarely elevated. The neoplastic cells may constitute up to 95% of the white blood count in the peripheral blood and bone marrow. These cells range from 10 to 20 microns in size, have a round oval or indented nucleus occupying

about one-half of the cell. The nucleus has a fine chromatin pattern and may have a single nucleolus. The cytoplasm is gray-blue, without granules, but occasionally with a vacuole. The distinctive feature is the irregular serrated cell border with numerous fine cytoplasmic projections and an occasional pseudopod. This feature is more clearly demonstrated by phase contrast microscopy.^{7,8,9,10}

Cytochemical studies of leukocytes by Yam showed that there is acid phosphatase activity in all types of leukocytes but the reticulum cells alone showed acid phosphatase activity resistant to L(+) tartaric acid. Monocytes showed a strong activity of non-specific esterase in contrast to the LRE cells which showed slight or no activity.¹¹

Biochemical studies of extracts of leukocytes also reported by Yam showed that there are seven isoenzymes of acid phosphatase and that a strong band of isoenzyme five is found only in the extracts of LRE cells.¹²

The features of the "hairy cell" are said to resemble lymphocytes more than monocytes by transmission and scanning electron microscopy but these studies are inconclusive.^{9,13,14,15}

The diagnosis of LRE rests upon recognition of the morphology of the cells and the demonstration of tartrate resistant acid phosphatase. It is important to make an accurate diagnosis in order to separate this disease from CLL and lymphosarcoma, two diseases with which it is confused. Chemotherapeutic agents used to treat these diseases may produce bone marrow failure in LRE. Although there are case reports of response to vincristine,⁹ treatment by alkylating agents is considered hazardous and the course, being indolent, responds to supportive treatment such as blood transfusion and antibiotics. The best results in terms of longevity have been reported following splenectomy when the spleen has been massively enlarged or there has been evidence of hypersplenism.

SUMMARY

A case is presented which conforms to the criteria established for the diagnosis of "hairy cell" leukemia by the morphologic characteristics demonstrated by light microscopy and by scanning electron microscopy of the cells. Also the criteria were fulfilled by the cytochemical reaction of tartrate resistant acid phosphatase and by the clinical course, which although progressive, has not required treatment other than blood transfusions.

ACKNOWLEDGEMENT

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A Case of Unilateral Pulmonary Edema

PAUL H. PFEIFFER, M.D.*

Pulmonary edema is a dramatic medical emergency usually involving both lungs. It can be produced by a host of conditions as well documented in an excellent review article by Robin, Cross, and Zelis.¹ The purpose of this article is to describe a case of unilateral pulmonary edema arising under unusual circumstances.

CASE REPORT

A 56-year-old man entered this hospital on November 27, 1973 complaining of weakness, fatigue, and increasing shortness of breath for two weeks. He had enjoyed reasonably good health until 1958 when he developed bronchial asthma. ACTH and/or prednisone therapy had been used intermittently since 1968. He had 11 hospital admissions because of respiratory difficulties between 1967 and November 1973. Exertional type anterior chest pains had been present since 1967 associated with normal electrocardiograms until September 1973 when, for the first time, T-wave inversion appeared in the lateral chest leads. Eosinophilia ranged from 0 to 6% on microscopic examination. In 1968, radiographic examination revealed a clover-leaf deformity of the duodenum and a mal-rotated cecum.

At the time of admission, the patient denied sudden or pleuritic chest pain and he had noted no hemoptysis. He weighed 158 pounds. The blood pressure was 130/90 with a regular heart rate of 100. The chest was hyperresonant. The breath sounds were distant, particularly on the left, and there were high-pitched wheezes and coarse rhonchi throughout both lung fields. He was not cyanotic. There was no clubbing. The heart appeared normal to examination as did the abdomen. There was one-plus soft, pitting edema of the lower legs and feet.

Laboratory tests revealed a normal CBC without eosinophiles. The urine also was normal. Blood gases were as follows: pH, 7.45; PCO₂, 35 mm. of mercury; PO₂, 61 mm. of mercury and O₂ saturation 93%. The electrocardiogram showed a vertical heart with peaked, pulmonale P waves and diphasic T waves in V₅ and V₆. The chest x-ray demonstrated a 50% collapse of the left lung due to a pneumothorax with no significant shift of the heart or mediastinum. Fig. 1 shows the pneumothorax, Fig. 2 the unilateral edema and Fig. 3 the partial clearing the following day. Sputum studies revealed a few inflammatory cells but no significant organisms were grown.

The day after admission, a chest tube was introduced in the second left interspace near the anterior axillary line. Fifteen cm. of water suction was applied to the tube through an underwater seal. The pneumothorax was relieved and breathing improved.

Five hours after the tube was placed in the left chest, the patient experienced the sudden onset of increasing dyspnea and the production of copious amounts of a frothy, pink sputum. A chest x-ray revealed pulmonary edema involving the left upper and mid-lung field. The patient rapidly became cyanotic, hyperactive, and extremely dyspneic. Therapy consisted of 500 mg. of aminophylline, 40 mg. of Lasix,[®] and ½ cc. of adrenalin administered intravenously in 250 cc. of 5% dextrose and water. This was repeated in half an hour and 200 mg. of Solu-Medrol[®] was added. An endotracheal tube was attached to a volume respirator and 100% oxygen was used with a tidal volume of 700 ml. Blood gases were pH, 7.2; PCO₂, 60 mm. of mercury; and PO₂, 129 mm. of mercury. Two hours after artificial ventilation was initiated the pH was 7.32; the PCO₂ was 47 mm. of mercury,



Fig. 1. P/A view of chest revealing a partial pneumothorax of left lung.

and the PO₂ was 207 mm. of mercury. The oxygen saturation was 99% and base excess, 2 mEq. The patient received another 180 mg. of Lasix intravenously four hours after the onset of symptoms along with another 200 mg. of Solu-Medrol.

By the next morning, his condition had improved. The endotracheal tube was removed and ventilation with the respirator was discontinued.

The subsequent course was complicated by another pneumothorax after the tube was removed. This time after reinsertion of the chest tube Lasix and Solu-Medrol were administered immediately and there was no repetition of the previously noted pulmonary edema. An air leak finally closed and the patient left the hospital on February 1, 1974.

DISCUSSION

There are reported cases in the medical literature of instances when unilateral pulmonary edema developed either on the ipsilateral or the contralateral side after treatment of either pneumothorax or hydrothorax. Ziskind, Weill and George² describe a 19-year-old student nurse with a pneumothorax whose chest cavity was exposed to 120 mm. mercury of negative pressure because of an error in the handling of the pressure control valve. She developed pulmonary edema of the involved lung, responded to intermittent positive pressure and oxy-

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Fig. 2. P/A view of chest revealing left-sided unilateral pulmonary edema.



Fig. 3. P/A view of chest revealing partial clearing of unilateral pulmonary edema.

gen. She went home after eleven days. Steckel³ describes the case of an 80-year-old man who developed edema of the contralateral lung after the successful re-expansion of a 50% left-sided pneumothorax. Trapnell and Thurston⁴ describe unilateral pulmonary edema in four cases. In two cases, this occurred on the ipsilateral side after large amounts (2000 to 3000 ml.) of pleural fluid had been removed. The edema was ipsilateral in the other two cases as

TABLE I

CAUSES OF PULMONARY EDEMA BASED ON MECHANISMS

Altered Permeability
Infectious pulmonary edema such as viral or bacterial pneumonia
Inhaled toxic agents such as phosgene, ozone and oxides of nitrogen
Circulating toxins such as alloxan, alpha-naphthylthiourea and snake venom
Vasoactive substances such as histamine, kinins and prostaglandins
Diffuse capillary leak syndrome such as endotoxemia and idiopathic capillary leak
Disseminated intravascular coagulation such as post-infectious immune-complex disease and heatstroke
Immunologic reactions such as drug idiosyncrasy reactions, certain allergic alveolitis and leukocyte sensitivity states
Radiation pneumonia
Uremia
Drowning and near drowning
Aspiration pneumonia
Smoke inhalation
Adult respiratory-distress syndrome such as post-traumatic pulmonary insufficiency
Increased Pulmonary Capillary Pressure
Cardiogenic, such as mitral-valve obstruction or left ventricular failure
Noncardiogenic, as in pulmonary venous disease due to pulmonary veno-occlusive disease, pulmonary venous fibrosis with highery pulmonary blood flow, congenital stenosis of origin of pulmonary veins and acquired pulmonary venous stenosis (mediastinal granuloma, fibrosing mediastinitis and mediastinal masses)
Overinfusion
Decreased Oncotic Pressure
Hypoalbuminemia related to the hypoalbuminemia of renal or hepatic disease, protein losing enteropathy or nutritional disorders
Lymphatic Insufficiency
Increased Negative Interstitial Pressure
High-negative-pressure-aspiration pulmonary edema
Mixed or Unknown Mechanisms
High-altitude pulmonary edema
Neurogenic pulmonary edema
Heroin (narcotic) overdose
Pulmonary embolism
Pulmonary parenchymal disease
Eclampsia
Cardioversion
Postanesthetic
Cardiopulmonary bypass

well who were treated for pneumothorax. One of the latter, an 18-year-old male, developed pulmonary edema of the left lung after the application of suction with a Roberts pump (exact pressure not given) and subsequently a cardiac arrest from which he failed to recover.

Since the causes of pulmonary edema are multiple and varied as the following chart, Table 1 (from Roblin, et al¹), discloses, it is often difficult to explain the cause of bilateral pulmonary edema, let alone unilateral edema.

In the case report herein described, most of the mechanisms in Table 1 obviously do not apply. The

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Renal Cell Carcinoma Metastasis to Choroid of Eye 20 Years After Nephrectomy for Calculus Disease

MEYER EMANUEL, M.D.* and WILFRED GUERRA, M.D.†

The bizarre behavior of carcinoma of the kidney often referred to as renal cell carcinoma or hypernephroma is well recognized. Its presence is capable of producing confusing symptom complexes suggestive of other diseases.¹ It may grow silently over a period of many years^{1,2,3} before coming to recognition and often it is the metastases that lead to its eventual discovery.⁴ It has recurred or metastasized many years after a nephrectomy^{2,4,5,6} and may even exist along with its metastases for years.³ Practically no organ of the body is exempt from its dissemination, the eye^{1,2,3,7} being one of the least common sites.

As further evidence of its caprice, we report on a case with still another quirk in the set of circumstances and sequence of events.

CASE REPORT

P. McF., age 29, was admitted to our urological service in November 1953. A stone had been removed from the right kidney in 1944 while he was in the armed forces. Subsequently, a stone recurred in the lower pole and mild hydronephrosis, pyelonephritis, and ureteropelvic constriction with slow emptying of the pelvis followed. There were periods of pain in the flank and episodes of fever. Several ureteral dilatations brought no lasting benefit. Plans were made for exploration in hopes of removing the stone and reconstructing the ureteropelvic outlet.

At operation, the kidney was surprisingly high in position and firmly fixed in a bed of dense fibrous tissue. It became evident that the intended procedure would not only be difficult but that the results of the plastic procedure ultimately would prove to be unrewarding to this patient who wanted to get back to work. In view of a normal left kidney, a right nephrectomy was carried out consisting of extracting the kidney from the cicatrized fossa and capsule. Resection of the 11th and 12th ribs was necessary and the pleura was torn requiring intermittent postoperative aspiration of the right chest. He convalesced satisfactorily and was discharged symptom-free. When seen in follow-up in 1957, he offered no complaints and was working steadily.

The pathologist's report described the histological examination as being conclusive of pyelonephritis, chronic, with obliteration of some of the glomeruli, and renal calculus.

Approximately 20 years later in November 1973, the patient again was admitted to the urology section as a transfer from a local community hospital. He was now age 50. His right eye recently had been enucleated for a tumor of the choroid. This was reported to be a renal cell carcinoma metastasis. A search for the primary lesion by the roentgenologist at that hospital included

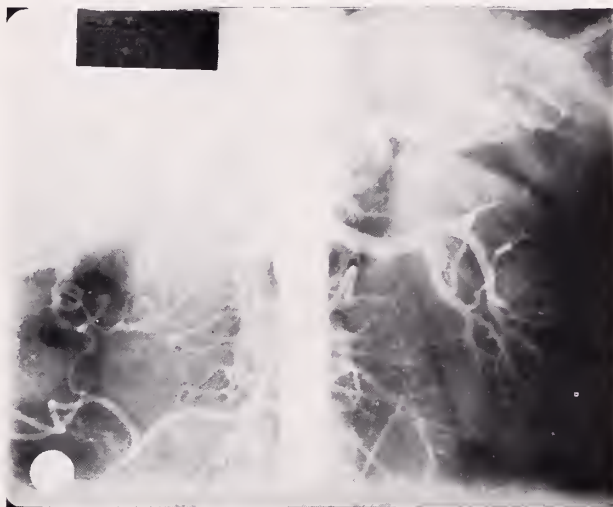


Fig. 1. Abdominal angiography showing normal left kidney and the stump of the right renal artery of the kidney removed 20 years previously. In the left lower quadrant of the plate, the right colic branch of the superior mesenteric artery can be seen feeding a ring-like arterial formation. A very small vessel from the arterial stump also can be seen contributing to the same formation.

abdominal angiography and selective catheterization of the superior mesenteric artery with visualization of its distribution. The left kidney was considered to be normal. The right kidney was absent and the short stump of its former renal artery could be seen. In the right abdomen in a position corresponding approximately to that of the inferior margin of the lower pole of the removed kidney, there was a skein-like mass of vessels fed by the right colic artery and some very fine vessels from the stump of the renal artery. This mass was about 6 cm. in diameter. In view of the circumstances, it was obviously suspicious as the source of the eye metastasis.

On August 15, 1973, through a right paramedian transabdominal approach, the retroperitoneal mass was reached and dissected out in one piece from a densely fibrous bed. Microscopic examination described typical renal cell carcinoma.

DISCUSSION

This case history is interesting for two reasons: First, as another instance of a renal cell carcinoma metastasis to the choroid of the eye and secondly because of the most unusual source of this metastasis. Here was a tumor mass in the right renal fossa giving rise to a renal cell carcinoma metastasis with the right kidney having been removed 20 years earlier for what was believed to be a purely non-malignant condition. In the light of established

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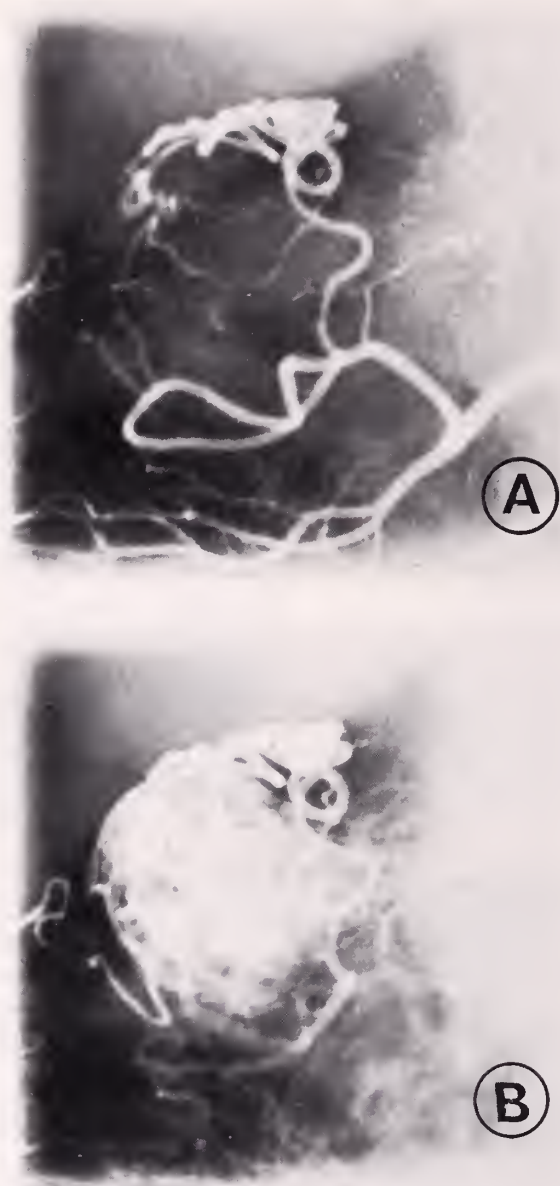


Fig. 2. Detail of the abdominal angiography showing (a) the right colic branch to the ring-like arterial formation and (b) capillary phase visualizing the tumor mass.

knowledge of renal cell carcinoma, the explanation would seem to lie in the probability that a small new growth was already present at the periphery of the kidney at the time of the nephrectomy but difficult to recognize grossly either by the preoccupied operator at the time of a difficult operation or by the pathologist. It may well have been of microscopic dimensions. Whether this small tumor was a true carcinoma or an adenoma which subsequently became carcinomatous, a controversial development,^{3,9} is left open to opinion.

For completeness, we take note of urogenital ridge mesonephromas. One rare malignant type is

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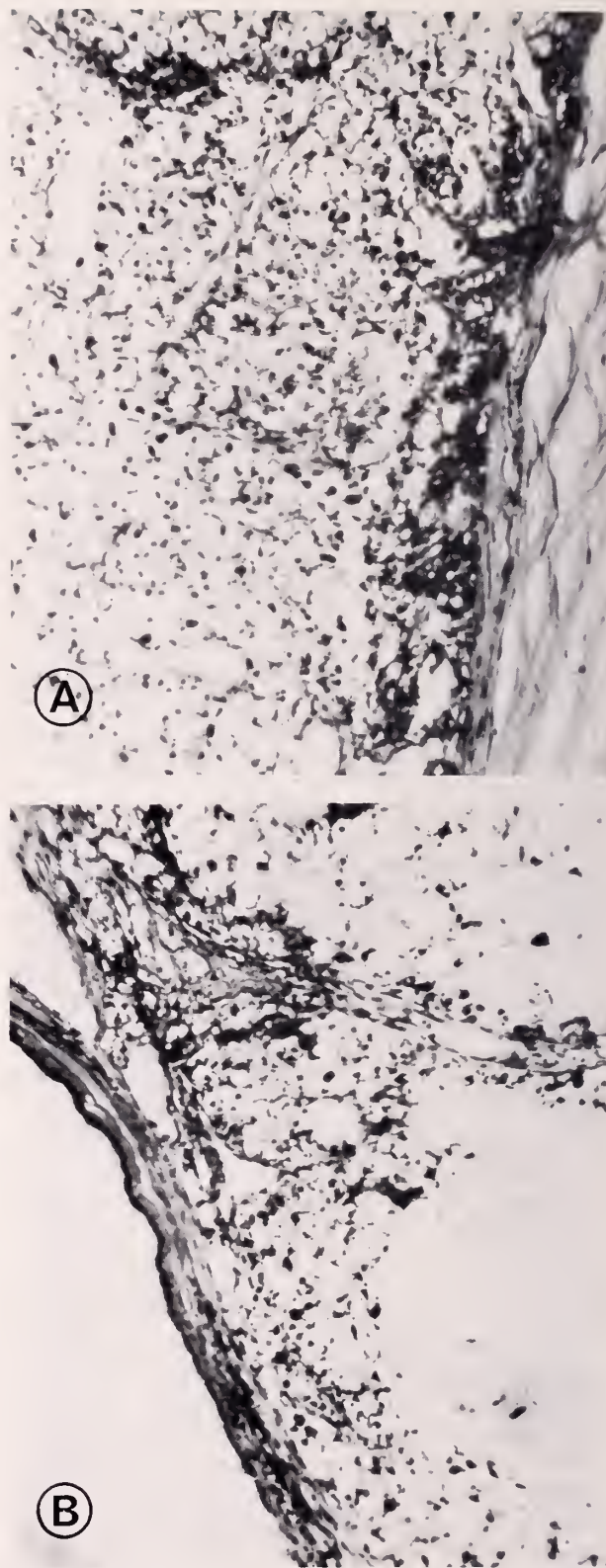


Fig. 3. Microscopic examination of a section from (a) the right abdominal mass showing typical renal cell carcinoma and (b) similar tissue of metastasis to the choroid of the eye.

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IMPORTANT INFORMATION: This is a Schedule V substance by Federal law; diphenoxylate HCl is chemically related to meperidine. In case of overdosage or individual hypersensitivity, reactions similar to those after meperidine or morphine overdosage may occur; treatment is similar to that for meperidine or morphine intoxication (prolonged and careful monitoring). Respiratory depression may recur in spite of an initial response to Nalline® (nalorphine HCl) or may be evidenced as late as 30 hours after ingestion. LOMOTIL IS NOT AN INNOCUOUS DRUG AND DOSAGE RECOMMENDATIONS SHOULD BE STRICTLY ADHERED TO, ESPECIALLY IN CHILDREN. THIS MEDICATION SHOULD BE KEPT OUT OF REACH OF CHILDREN.

Indications: Lomotil is effective as adjunctive therapy in the management of diarrhea.

Contraindications: In children less than 2 years, due to the decreased safety margin in younger age groups, and in patients who are jaundiced or hypersensitive to diphenoxylate HCl or atropine.

Warnings: Use with caution in young children, because of variable response, and with extreme caution in patients with cirrhosis and other advanced hepatic disease or abnormal liver function tests, because of possible hepatic coma. Diphenoxylate

HCl may potentiate the action of barbiturates, tranquilizers and alcohol. In theory, the concurrent use with monoamine oxidase inhibitors could precipitate hypertensive crisis.

Usage in pregnancy: Weigh the potential benefits against possible risks before using during pregnancy, lactation or in women of childbearing age. Diphenoxylate HCl and atropine are secreted in the breast milk of nursing mothers.

Precautions: Addiction (dependency) to diphenoxylate HCl is theoretically possible at high dosage. Do not exceed recommended dosages. Administer with caution to patients receiving addicting drugs or known to be addiction prone or having a history of drug abuse. The subtherapeutic amount of atropine is added to discourage deliberate overdosage; strictly observe contraindications, warnings and precautions for atropine; use with caution in children since signs of atropinism may occur even with the recommended dosage.

Adverse reactions: Atropine effects include dryness of skin and mucous membranes, flushing and urinary retention. Other side effects with Lomotil include nausea, sedation, vomiting, swelling of the gums, abdominal discomfort, respiratory depression, numbness of the extremities, headache, dizziness, depression, malaise, drowsiness, coma, lethargy, anorexia, restlessness, euphoria, pruritus, angioneurotic edema, giant urticaria and paralytic ileus.

Dosage and administration: Lomotil is contraindicated in children less than 2 years old. Use only Lomotil liquid for children 2 to 12 years old. For

ages 2 to 5 years, 4 ml. (2 mg.) t.i.d.; 5 to 8 years, 4 ml. (2 mg.) q.i.d.; 8 to 12 years, 4 ml. (2 mg.) 5 times daily; adults, two tablets (5 mg.) t.i.d. to two tablets (5 mg.) q.i.d. or two regular teaspoonfuls (10 ml., 5 mg.) q.i.d. Maintenance dosage may be as low as one fourth of the initial dosage. Make downward dosage adjustment as soon as initial symptoms are controlled.

Overdosage: Keep the medication out of the reach of children since accidental overdosage may cause severe, even fatal, respiratory depression. Signs of overdosage include flushing, lethargy or coma, hypotonic reflexes, nystagmus, pinpoint pupils, tachycardia and respiratory depression which may occur 12 to 30 hours after overdosage. Evacuate stomach by lavage, establish a patent airway and, when necessary, assist respiration mechanically. Use a narcotic antagonist in severe respiratory depression. Observation should extend over at least 48 hours.

Dosage forms: Tablets, 2.5 mg. of diphenoxylate HCl with 0.025 mg. of atropine sulfate. Liquid, 2.5 mg. of diphenoxylate HCl and 0.025 mg. of atropine sulfate per 5 ml. A plastic dropper calibrated in increments of 1/2 ml. (total capacity, 2 ml.) accompanies each 2-oz. bottle of Lomotil liquid.

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Before prescribing, see complete prescribing information in SK&F literature or PDR. The following is a brief summary.

- * **Indications**
Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows:
Possibly effective: For relief of upper respiratory tract congestion and hypersecretion associated with vasomotor rhinitis and allergic rhinitis, and for prolonged relief.
Lacking in substantial evidence of effectiveness: For relief of nasal congestion and hypersecretion associated with the common cold and sinusitis.
Final classification of the less-than-effective indications requires further investigation.

Contraindications: Hypersensitivity to any component; concurrent MAO inhibitor therapy; severe hypertension; bronchial asthma; coronary artery disease; stenosing peptic ulcer; pyloroduodenal or bladder neck obstruction. Children under 6.

Warnings: Caution patients about activities requiring alertness (e.g., operating vehicles or machinery). Warn patients of possible additive effects with alcohol and other CNS depressants.

Usage in Pregnancy: In pregnancy, nursing mothers and women who might bear children, weigh potential benefits against hazards. Inhibition of lactation may occur.

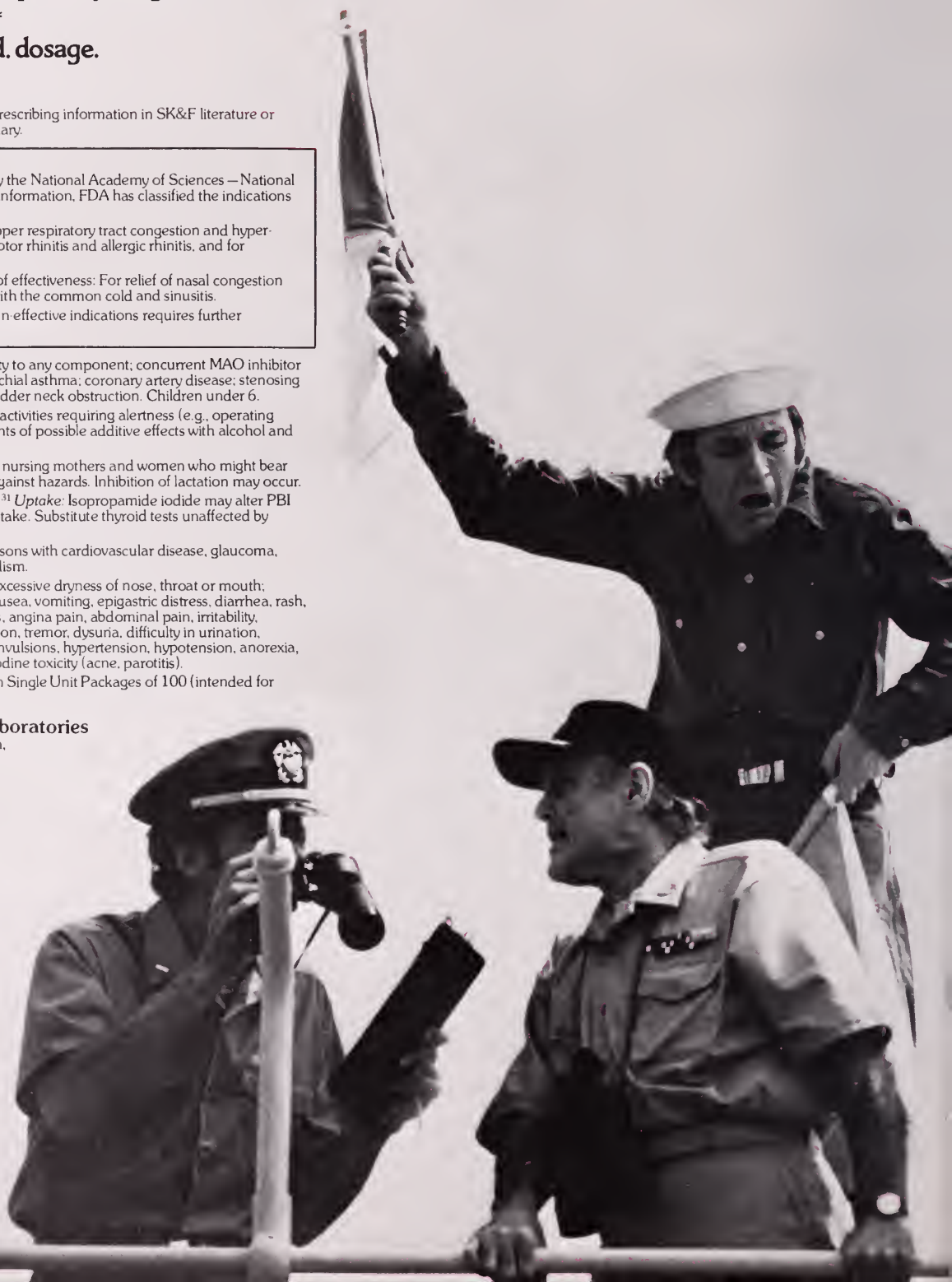
Effect on PBI Determination and I^{131} Uptake: Isopropamide iodide may alter PBI test results and will suppress I^{131} uptake. Substitute thyroid tests unaffected by exogenous iodides.

Precautions: Use cautiously in persons with cardiovascular disease, glaucoma, prostatic hypertrophy, hyperthyroidism.

Adverse Reactions: Drowsiness, excessive dryness of nose, throat or mouth; nervousness; or insomnia. Also, nausea, vomiting, epigastric distress, diarrhea, rash, dizziness, weakness, chest tightness, angina pain, abdominal pain, irritability, palpitation, headache, incoordination, tremor, dysuria, difficulty in urination, thrombocytopenia, leukopenia, convulsions, hypertension, hypotension, anorexia, constipation, visual disturbances, iodine toxicity (acne, parotitis).

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histologically reminiscent of clear cell carcinoma and designated as "hypernephroid." Smith, Webb and Price⁹ mention seven cases and report five of their own. These have been very large, on the left side in relation to the lower pole of the kidney. One patient's tumor was relatively small, on the right side of the abdomen, but in a position that does correspond to the lower pole of the removed kidney. The implication which cannot be pursued here further is that a mesonephric remnant might have given rise to a tumor such as we report.

SUMMARY

A renal cell carcinoma metastasis to the choroid of the right eye of a 50-year-old male led to the discovery of a renal cell tumor not in a kidney but at the site from which a kidney had been removed 20 years earlier for the sequelae of calculus disease. It seems most reasonable to surmise that at the time of the nephrectomy there was a small unrecognizable tumor mass which was left behind to grow

slowly over a period of 20 years to produce the metastasis to the eye.

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Health Education in Maine Gets a Boost From the HERC Project

JOHN MEADER,* JERRY STRAND** and PETER DORAN***

Maine's Health Education Resource Center, or HERC is an experimental project designed to test a variety of ways of promoting health education in Maine. These ways range from:

- Education of existing professionals and key members of communities, through workshops, seminars and special courses, to provide health education to
- Production of health education tools such as movies, film strips, multi-media packages and new curricula, for use in schools and the community, to
- Support to health delivery systems, by designing client or patient education materials and providing health professionals with new education skills, to
- Provision of consultant services for planning and design of health education projects to health and health-related community agencies, to
- Delivery of new health education courses and development of new health education personnel on the University of Maine at Farmington campus.

Funded by Maine's Regional Medical Program, HERC is housed at UMF's modern Learning Center. Its services are delivered on an on-demand basis by a staff of professionals who function as a team. The team includes a health educator, an educational media specialist, a writer, a graphic artist, a media technician and two student interns drawn from the UMF student body.

As an adjunct to its wide range of both direct and indirect health education services — everything from planning to production to teaching, HERC maintains a resource library of health education materials, catalogued according to subject area and

media for easy access. HERC also serves as the lending library for a number of new video-tape health education programs including the widely-used and highly popular "Inside/Out" series for fourth, fifth and sixth graders.

A number of key concepts have guided the development of HERC from the outset, among them that of a People to People Communication Delivery System, as articulated by UMF President, Dr. Einar Olsen. This concept stresses the use of communications technology as a bridge between persons with education skills and information and people with education needs. The emphasis in this case is unquestionably placed upon people; much of what HERC does is to educate educators — be they teachers, doctors, mental health workers, nurses, or health administrators. HERC prepares such persons to return to their communities to educate other groups of people; a sort of chain reaction.

Another key commitment on the part of HERC is to the development of strategies for promoting health education. Such a commitment works in two ways. First, steps are taken to assure that any particular health education tool is appropriate to the intended use, and that its user gets the support necessary to assure its most effective utilization. In the case of "Inside/Out" for instance, HERC helped provide a workshop for teachers introducing them to innovative techniques for getting optimal classroom value out of the series. Secondly, HERC also works with its clients to develop ways of selling programs to the community at large, whose support is crucial for the long-term success of any health education program.

HERC's success over a year and a half of operation has been notable. At this point demand for services is so great that proposals for any new project must anticipate a waiting time in the order of two to four months. HERC regrets the delay, but comfort can be taken from what HERC has amply demonstrated — that health education in Maine is an idea whose time has come!

*HERC Consultant

**Director

***Coordinator

Special Article

Rheumatic Fever VIII: A Community Streptococcal Control Program

Clinical investigators have demonstrated that streptococcal infections and their sequelae can be controlled in military populations by intensive bacteriological surveillance and enforced treatment.

In several states, such as New Jersey and Wyoming, similar programs have proven effective in civilian school populations.* Reception of these programs where they have been instituted has been enthusiastic and the incidence of rheumatic fever has markedly decreased.

The rationale of these programs is quite simple. It is agreed that any case of streptococcal pharyngitis should be confirmed by throat culture and treated with appropriate antibiotics. Since streptococcal pharyngitis is overwhelming a disease of school children during the school year, these detection and prevention programs have been organized within the school health system in cooperation with the State Department of Health.

School nurses have been trained in the principles of streptococcal disease control and in the techniques of throat culturing, plating on blood agar, and subsequent identification of Group A beta-hemolytic streptococcal colonies.

Throat cultures are available in all the school nurses offices of the community free of charge to any child with symptoms of an upper respiratory infection.

Symptomatic children are detected by inquiry in each school room at the beginning of the school day. Those admitting symptoms are examined and throat culture is taken.

The cultures are prepared and incubated in the nurses office and the results are available the next morning.

Under the State Health Law, streptococcal pharyngitis is deemed a reportable and excludable illness like many other contagious diseases.

Children with positive cultures are excused from school so that they may be treated by their own physician. A note is sent to the doctor informing him of the child's streptococcal infection and requesting his signature verifying that he has treated the child according to the recommendations of the American Heart Association.

The student is readmitted to his classes after feeling well and only with the return of the doctor's signature.

All family contacts of the index case are advised

to get throat cultures which may be obtained in the school nurses office.

Routine throat cultures are performed on all children in any classroom where multiple positive throat cultures appear. In the Wyoming program, one row of children from each room is sent for inspection each day and, if signs of inflammation are noted, throat cultures are taken. Thus, each child in school is inspected at least once a week.

Four elements are critical to the success of this and similar programs:

1. Education

An intense program of education directed primarily to the school children and their parents is critical. The significance of simple sore throat and the importance of identification of streptococcal infections in the prevention of rheumatic fever must be stressed. Prepared pamphlets, coloring books and booklets for students, printed sheets directed to parents, teachers, school nurses and to all community physicians including those in emergency rooms may be distributed along with newspaper releases and radio and television spot announcements to inform all members of the community of the program. "Fight Strep Crusades" have been encouraged in schools and resulted in community drive poster contests as well as the encouragement of strep disease control expertise in all schools, with enthusiastic support by administrative teaching and school nursing personnel.

2. Laboratory Diagnosis

Laboratory facilities must be provided either in the school nurses office or in cooperation with the State Health Laboratory. Prompt reporting is essential.

3. Legal Enforcement

Streptococcal pharyngitis is *not* a reportable and excludable disease in the State of Maine, although it is in many states. This feature has proved essential to the success of the presently operational community wide programs and our health code would have to be modified accordingly.

4. Treatment

Conventionally the only victims of streptococcal pharyngitis who receive adequate diagnosis and treatment are children with *severe* symptoms who describe these symptoms to usually well-educated, medically-oriented parents who in turn call an alert, informed physician. As effort in prevention has

*A Community Wide Streptococcal Control Project, Brendon Phibbs, Joanne Taylor, Robert A. Zimmerman, JAMA, 214: 2018-2024m 1970.

spread in other states, it has become increasingly clear that other professional training in this particular subject is the greatest present gap in the application of scientific knowledge to prevent first attacks of rheumatic fever.

Local Heart Associations have had a major rheumatic fever program in the country and since this disease still occurs, rheumatic fever continues to be one of our responsibilities. Rheumatic fever committees and physicians in general should think in terms of *community* control of streptococcal infections. Only in this way will we be able to decrease the number of first attacks of this disease.

The above presentation of programs of the type currently operational in several states is intended to stimulate interest. With the cooperation of parents, physicians and school officials, a program of this

type could be tailored to fit the needs of the State of Maine.

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PSRO and Hospital Delegation

One of the more commonly asked questions as we go around the State is — How does a hospital become exempt from PSRO? Earlier PSRO literature talked about this exemption, and in fact, recent articles have indicated that if a hospital for example does a certain type of medical audit, they qualify for exemption.

The facts of the matter are that a hospital may not be exempted from PSRO review, but, may be delegated responsibility if they meet certain criteria.

The PSRO Program Manual makes it clear that the local PSRO organization is *responsible* for conducting the three levels of hospital review that are required — that is, (1) concurrent review, which includes admission certification continued stay review and discharge planning, (2) medical care evaluation studies, and (3) profile analysis. The manual also points out that in conducting its responsibility for this review, a PSRO *may delegate to hospitals* the responsibility for that review if the hospital meets other criteria that are established in the manual. These other criteria include the following: (1) at least fifty percent of that hospital's active staff have to be members of the local PSRO, (2) there has to be a signed agreement by that hospital staff that they are willing and capable of assuming the responsibilities for the PSRO review in their institution, (3) their utilization review plan would have to reflect the procedures that are necessary now in PSRO review, particularly the conduct of admission certification, and (4) they must share with the local PSRO's certain data in an aggregate sense from their review responsibilities, which are in a sense the reporting requirements the PSRO in turn is responsible for to the Department of Health and Welfare in Washington.

It is the philosophy of the Pine Tree Organization for Professional Standards Review, Inc., in Maine, that we wish to delegate to hospitals wherever possible the review responsibility. As we drafted our plan for conditional PSRO delegation, we reflected that philosophy in writing up our specific plan of action. We will also be conducting educational and instructional meetings around the State with hospital staffs, so we can explain to them just exactly what will be required of them and hope that they will see their way to accept the responsibility for review. It is our belief that the educational responsibilities of the PSRO cannot be met unless the focus of review activity and the focus of continuing medical education activities resulting from PSRO review are conducted in the community hospital themselves.

The Pine Tree Organization for Professional Standards Review has received the endorsement of the Maine Medical Association and the Maine Osteopathic Association.

The Board of Directors of the Pine Tree Organization invites all physicians licensed to practice in Maine to join the organization. A membership application follows. Please complete it and forward it to Pine Tree Organization for Professional Standards Review, Inc. c/o Richard T. Chamberlin, M.D., President, P.O. Box 706, 99 Western Avenue, Augusta, Maine 04330.

PINE TREE ORGANIZATION FOR PROFESSIONAL STANDARDS REVIEW, INC.

MEMBERSHIP APPLICATION

I, _____, presently admitted to practice medicine in the State of Maine, hereby apply for membership in the Pine Tree Organization for Professional Standards Review, Inc.

I understand that there are no financial commitments (i.e. dues) as a condition to my membership and that my membership shall continue as long as I am licensed to practice medicine in the State of Maine or until I voluntarily elect to resign. Resignation may be made at any time in writing directed to the Clerk of Pine Tree Organization for Professional Standards Review, Inc.

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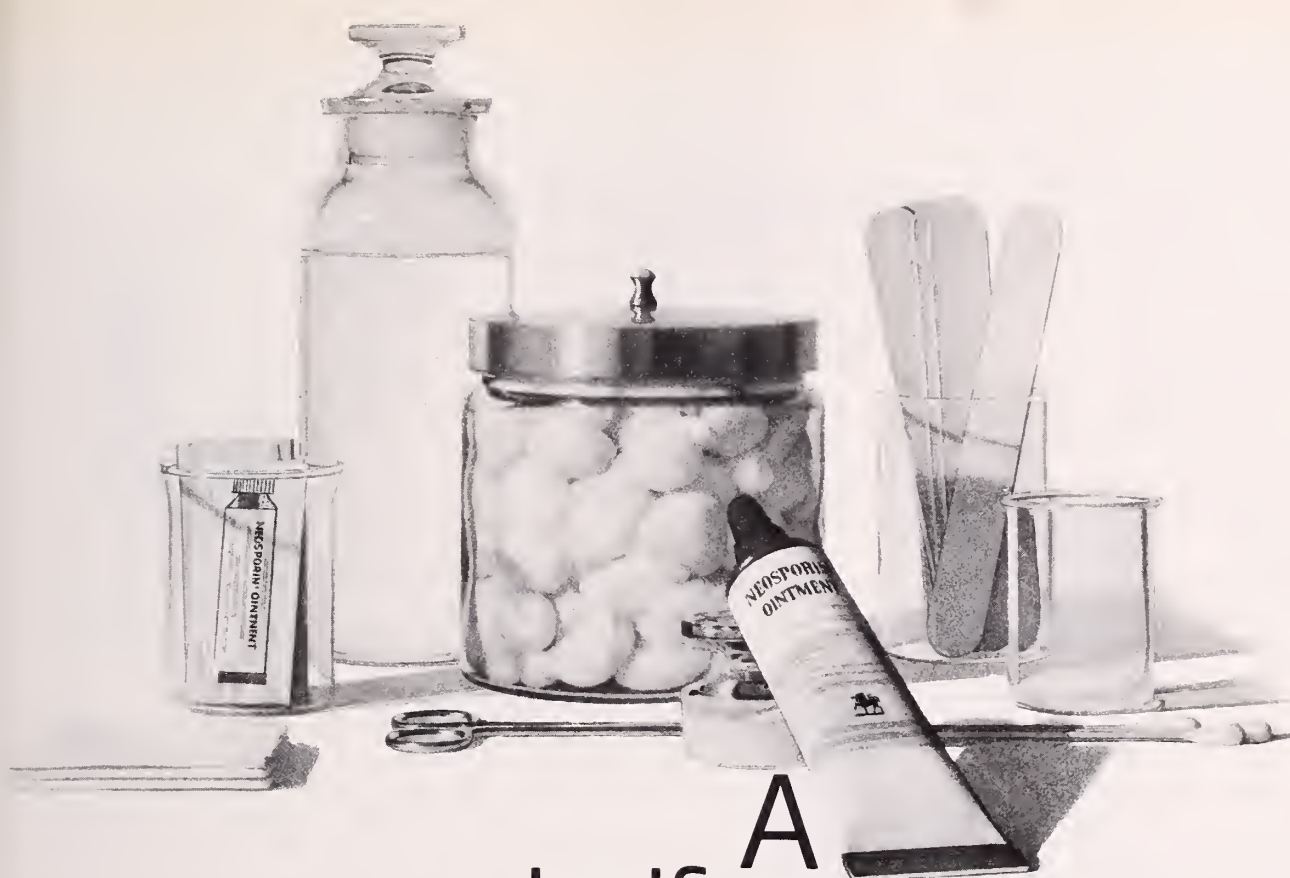
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Neosporin Ointment. A half-ounce of prevention. Also available in a full ounce of prevention and in convenient foil packets.

Neosporin Ointment carried on Apollo and Skylab missions.

Neosporin® Ointment (polymyxin B-bacitracin-neomycin)

Each gram contains: Aerosporin® brand Polymyxin B Sulfate 5,000 units; zinc bacitracin 400 units; neomycin sulfate 5 mg (equivalent to 3.5 mg neomycin base); special white petrolatum qs.
In tubes of 1 oz and 1/2 oz and 1/32 oz (approx.) foil packets.

INDICATIONS: *Therapeutically*, used as an adjunct to appropriate systemic therapy for topical infections, primary or secondary, due to susceptible organisms, as in: • infected burns, skin grafts, surgical incisions, otitis externa • primary pyoderms (impetigo, ecthyma, sycosis vulgaris, paronychia) • secondarily infected dermatoses (eczema, herpes, and seborrheic dermatitis) • traumatic lesions, inflamed or suppurating as a result of bacterial infection. *Prophylactically*, the ointment may be used to prevent bacterial contamination in burns, skin grafts, incisions, and other clean lesions. For abrasions, minor cuts and wounds accidentally incurred, its use may prevent the development of infection and permit wound healing.

CONTRAINDICATIONS: Not for use in the eyes or external ear canal if the eardrum is perforated. This product is contraindicated in those individuals who have shown hypersensitivity to any of the components.

WARNING: Because of the potential hazard of nephrotoxicity and ototoxicity due to neomycin, care should be exercised when using this product in treating extensive burns, trophic ulceration and other extensive conditions where

absorption of neomycin is possible. In burns where more than 20 percent of the body surface is affected, especially if the patient has impaired renal function or is receiving other aminoglycoside antibiotics concurrently, not more than one application a day is recommended.

PRECAUTIONS: As with other antibacterial preparations, prolonged use may result in overgrowth of nonsusceptible organisms, including fungi. Appropriate measures should be taken if this occurs.

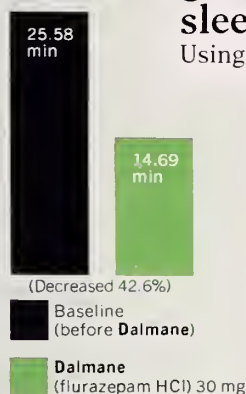
ADVERSE REACTIONS: Neomycin is a not uncommon cutaneous sensitizer. Articles in the current literature indicate an increase in the prevalence of persons allergic to neomycin. Ototoxicity and nephrotoxicity have been reported (see Warning section).

Complete literature available on request from Professional Services Dept. PML.



Burroughs Wellcome Co.
Research Triangle Park
North Carolina 27709

Average Time Required
to Fall Asleep (4 Studies,
16 Subjects²⁻⁵)



confirmed by clinical studies in four geographically separated sleep research laboratories²⁻⁵

Using a 14-night protocol involving eight insomniac and eight normal subjects, four studies confirmed the sleep-inducing effectiveness of Dalmane (flurazepam HCl) and the reproducibility of this response. On average, one 30-mg capsule induced sleep within 17 minutes. In all these studies, Dalmane induced sleep rapidly, reduced nighttime awakenings, and provided 7 to 8 hours of sleep without repeating dosage²⁻⁵

Dalmane (flurazepam HCl) induces and maintains sleep, with relative safety

Dalmane is generally well tolerated; morning "hang-over" has been relatively infrequent. While dizziness, drowsiness, lightheadedness and the like have been noted most often, particularly in the elderly and debilitated, physicians should be aware of the possibility of more serious reactions, as noted below.

Before prescribing Dalmane (flurazepam HCl), please consult Complete Product Information, a summary of which follows:

Indications: Effective in all types of insomnia characterized by difficulty in falling asleep, frequent nocturnal awakenings and/or early morning awakening; in patients with recurring insomnia or poor sleeping habits; and in acute or chronic medical situations requiring restful sleep. Since insomnia is often transient and intermittent, prolonged administration is generally not necessary or recommended.

Contraindications: Known hypersensitivity to flurazepam HCl.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. Caution against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Use in women who are or may become pregnant only when potential benefits have been weighed against possible hazards. Not recommended for use in persons under 15 years of age. Though physical and psychological dependence have not been reported on recommended doses, use caution in administering to addiction-prone individuals or those who might increase dosage.

Precautions: In elderly and debilitated, initial dosage should be limited to 15 mg to preclude oversedation, dizziness and/or ataxia. If combined with other drugs having hypnotic or CNS-depressant effects, consider potential additive effects. Employ usual precautions in patients who are severely depressed, or with latent depression or suicidal tendencies. Periodic blood counts and liver and kidney function tests are advised during repeated therapy. Observe usual precautions in presence of impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdose, have been reported. Also reported were headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations, and elevated SGOT, SGPT, total and direct bilirubins and alkaline phosphatase. Paradoxical reactions, e.g., excitement, stimulation and hyperactivity, have also been reported in rare instances.

Dosage: Individualize for maximum beneficial effect. *Adults:* 30 mg usual dosage; 15 mg may suffice in some patients. *Elderly or debilitated patients:* 15 mg initially until response is determined.

Supplied: Capsules containing 15 mg or 30 mg flurazepam HCl.

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5. Dement WC: Data on file, Medical Department, Hoffmann-La Roche Inc, Nutley NJ

when restful sleep
is indicated

Dalmane[®]

(flurazepam HCl)

One 30-mg capsule h.s. — usual adult dosage
(15 mg may suffice in some patients).

One 15-mg capsule h.s. — initial dosage for
elderly or debilitated patients.

- induces sleep within 17 minutes, on average
- reduces nighttime awakenings
- sustains sleep 7 to 8 hours, on average, without repeating dosage



ROCHE LABORATORIES
Division of Hoffmann-La Roche Inc.
Nutley, New Jersey 07110

The Role of the Detail Man

"I may be prejudiced, but I am very much in favor of the detail men I meet. Most of them are knowledgeable about the drugs they promote and can be a great help in acquainting me with new medication."

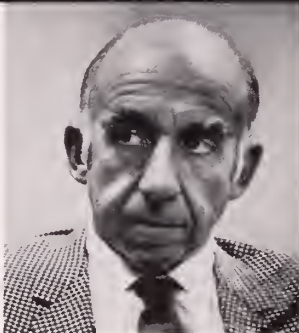
Family Physician's Perception

I think that most general practitioners in this area feel as I do about the detail man. Over the years I have gotten to know most of the men who visit me regularly and they in turn have become aware of my particular interests and the nature of my practice. They, therefore, limit their discussion as much as possible to the areas of interest to me. Since I usually see the same representative again in future visits, it is in his best interest to supply me with the most honest, factual, as well as up-to-date information about his products.

Dr. Willard Gobbell
Family Physician
Encino, California



Dr. Jeremiah Stamler
Chairman
Department of Community
Health and Preventive
Medicine, and Dingman
Professor of Cardiology
Northwestern University
Medical School



"In the total picture of dealing with health problems in this country, there is a potential for detail men to play a meaningful role."

The Positive Influence

My contact with representatives and salesmen of the pharmaceutical industry is the type of contact that people in a medical center, research people, and academic people have and that's in all likelihood on a somewhat different level from that of the practicing physician.

Let me touch on how I personally perceive the role of the sales representative. These men reach large numbers of health professionals. Thus they could be — and at times actually are — disseminators of useful information. They could consistently serve a real educational function in their ability to discuss their products.

At present they do distribute printed material, brochures and pamphlets — some of it scientifically sound and therefore truly useful — as well as some excellent films produced by the pharmaceutical industry. When they function in this

Opinion
&
Dialogue

Is He a Source of Information?

Yes, with certain reservations. The average sales representative has a great fund of information about the drug products he is responsible for. He is usually able to answer most questions fully and intelligently. He can also supply reprints of articles that contain a great deal of information. Here, too, I exercise some caution. I usually accept most of the statements and opinions that I find in the papers and studies which come from the larger teaching facilities. It goes without saying that a physician should also rely on other sources for his information on pharmacology.

Training of Sales Representatives

Ideally, a candidate for the position as a sales representative of a pharmaceutical company should be a graduate pharmacist who has a questioning mind. I don't think this is possible in every case, and so it becomes the responsibility

of the pharmaceutical company to train these individuals comprehensively. It is of very great importance that the detail man's knowledge of the product he represents be constantly reviewed as well as updated. This phase of the sales representative's education should be a major responsibility of the medical department of the pharmaceutical company.

I am certain that most of these companies take special care to give their detail men a great deal of information about the products they produce—information about indications, contraindications, side effects and precautions. Yet, although most of the detail men are well informed, some, unfortunately, are not. It might be helpful if sales representatives were reassessed every few years to determine whether or not they are able to fulfill their important function. Incidentally, I feel the same way about periodic assessments of everyone

in the health care field, whether they be general practitioners, surgeons or salesmen.

Value of Sampling

I personally am in favor of limited sampling. I do not use sampling in order to perform clinical testing of a drug. I feel that drug testing should rightly be left to the pharmacology researcher and to the large teaching institutions where such testing can be done in a controlled environment.

I do not use samples as a "starter dose" for my patients. I do, however, find samples of drugs to be of value in that they permit me to see what the particular medication looks like. I get to see the various forms of the particular medication at first hand, and if it is in a liquid form I take the time to taste it. In that way I am able to give my patients more complete information about the particular medications that I prescribe for them.

capacity they are indeed useful; particularly in the fact that they disseminate broadly based educational material and serve not just as "pushers" of their drugs.

The Other Side of the Coin

Obviously, the pharmaceutical companies are not producing all this material as a labor of love—they are in the business of selling products for profit. In this regard the ambitious and improperly motivated sales representative can exert a negative influence on the practicing physician, both by presenting a one-sided picture of his product, and by encouraging the practitioner to depend too heavily on drugs for his total therapy. In these ways, the salesman has often distorted objective reality and undermined his potential role as an educator.

The Industry Responsibility

Since the detail man must be an information resource as well as a representative of his particular pharmaceutical company, he should be carefully selected and

thoroughly trained. That training, perforce, must be an ongoing one. There must be a continuing battle within and with the pharmaceutical industry for high quality not only in the selection and training of its sales representatives, but also in the development of all of its promotional and educational material.

The industry must be ready to accept constructive as well as corrective criticism from experts in the field and consumer spokesmen, and be willing to accept independent peer review. The better educated and prepared the salesman is, the more medically accurate his materials, the better off the pharmaceutical industry, health professionals and the public—*i.e.*, the patients—will be.

Physician Responsibility

The practicing physician is in constant need of up-dated information on therapeutics, including drugs. He should and does make use of drug information and answers to specific questions supplied by the pharmaceutical representative. However, that informa-

tion must not be his main source of continuing education. The practitioner must keep up with what is current by making use of scientific journals, refresher courses, and information received at scientific meetings.

The practicing physician not only has the right, but has the responsibility to demand that the pharmaceutical company and its representatives supply a high level of valid and useful information. I feel certain that if such a high level is demanded by the physician as well as the public, this demand will be met by an alert and concerned pharmaceutical industry.

From my experience, my impression is that sectors of the pharmaceutical industry are indeed ethical. I challenge the industry as a whole to live up to that word in its finest sense.

*Pharmaceutical
Manufacturers Association
1155 Fifteenth Street, N.W.
Washington, D. C. 20005*





BLUE CROSS OUTPATIENT BENEFITS EXPANDED

As a result of decreased utilization of Blue Cross coverage by subscribers, possibly because of shorter overall hospital stays, a pilot program was made possible which provides liberalized hospital outpatient laboratory services. The pilot program, which went into effect November 1st, affects all Blue Cross subscribers in Maine.

Early in 1974, Maine Blue Cross and Blue Shield finance personnel noticed an aberration in the utilization figures for Blue Cross members. Blue Cross projections in this area have historically been quite accurate, but this year, actual figures fell below projected figures; and as a result, Blue Cross funds earmarked for the projected utilization were made available for the pilot program.

The Benefits Review and Development Committee of Maine Blue Cross and Blue Shield considered many ways to provide expanded benefits to subscribers. The possibility of expanding Blue Cross and Blue Shield benefits together was explored, but it was determined that it was not financially feasible to use savings in Blue Cross to increase benefits under both lines of business.

The new hospital outpatient benefits provide coverage for all laboratory services, indicated by symptoms of illness or injury, provided to Blue Cross members in the outpatient department.

Previous to this expansion, Blue Cross and Blue Shield outpatient benefits had been essentially analogous. Now regular Blue Shield outpatient benefits fall behind Blue Cross benefits. A Blue Shield rider, being made available to employee groups, will equalize Blue Cross and Blue Shield benefits once again so that physicians can provide expanded outpatient laboratory services to eligible subscribers in their offices.

At present, however, Blue Shield benefits for outpatient laboratory services rendered by a physician include:

EMERGENCY CARE

Emergency care within 72 hours of an accident.

SURGICAL AND FRACTURE PROCEDURES

Services involving cutting procedures, fracture services and cast applications.

DIAGNOSTIC SERVICES

In the case of the following diagnostic services, Blue Shield provides payment to private physician for X-ray service (other than teeth) according to fee schedule. It also pays usual, customary and reasonable charges for all diagnostic procedures listed below:

Electrocardiograms (limited to charges up to \$15.00 a day), Electroencephalograms, Basal metabolism tests, Pathology exams of spinal fluid or surgically removed tissue, T-3 tests, Protein bound iodine tests, Radioactive iodine uptake tests, Radioisotope exams.

Information about the expanded Blue Shield benefits rider will be sent to physicians as soon as it is finalized.

Rational Use of Psychotropic Drugs

IV. Antidepressants*

DAVID J. GREENBLATT, M.D. and RICHARD I. SHADER, M.D.

Depressive syndromes are commonly encountered by health care professionals.^{1,2} Classification of these clinical syndromes is subject to much controversy, and no single schema has received universal acceptance. Clinical experience suggests and supports a subdivision of depressive disorders into at least four major subtypes: 1) situational or reactive depressions; 2) depression secondary to toxic states or other medical conditions; 3) chronic characterological depressions; and 4) endogenous or autonomous depressions. Obviously the subtypes can overlap. A chronically depressed individual who experiences life with a sense of dysphoria, demoralization, or defeat could have a superimposed situational depression associated with the loss of a loved one.

Like anxiety, depression can be seen as normal or pathologic. Most humans have felt grief or depression in response to loss or rejection, such as after the death of a loved one or following a professional failure. The depression lasts a few weeks or a few months, during which time the bereaved individual must come to terms with his or her feelings about the lost object. At some point the depression lifts and the individual begins to invest in new relationships. The presence of pathological grief can be suspected when the depressive syndrome fails to remit

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*This article completes the four-part series.

TABLE 1

MANIFESTATIONS OF ENDOGENOUS DEPRESSION

Sadness
Unhappiness
Tearfulness
Pessimism
Despair
Psychomotor agitation or retardation
Loss of energy and vitality
Inability to experience pleasure
Decreased interest or ambition
Decreased responsivity to environmental events
Decreased responsivity to interpersonal interactions
Loss of appetite
Disturbed sleep
Constipation

spontaneously after a year or more. Endogenous depression often occurs either without obvious precipitants or after events which appear insufficient to explain the severity of the symptoms. Common manifestations of endogenous depression are listed in Table 1. Some patients have "bipolar" affective disease (manic-depressive depression) in which the endogenous depression is just one phase of the illness. Our experience suggests that these depressive episodes are typically characterized by psychomotor retardation and hypersomnia, while the endogenous pattern associated with midlife or involutional depression is more often characterized by psychomotor agitation, or a mixture of agitation and retardation, and hypsomnia.

When symptoms arise in a previously well-adjusted individual who is hospitalized because of physical illness, depression is usually of the situational type. The patient's loss — his bodily health and the self-esteem that goes with physical strength and vigor — is real. Depression usually remits in time once the patient adapts to the extent of his loss and/or to the changes in life-style that must be faced. In many cases disability is not nearly so extensive as the patient anticipates at the onset of his illness. Young males with acute myocardial infarction, for example, often become profoundly depressed while in the coronary care unit, as they envision a life as a cardiac cripple; yet many recover fully and return to

their former professional, social, and sexual vigor.

The depressed patient in the general hospital is frequently misdiagnosed both by psychiatrists and by physicians in other specialties. On the one hand, symptoms resembling mental depression can be manifestations of a variety of medical diseases. Many of these involve hypo- or hyperfunction of endocrine organs such as the adrenals, thyroid, or parathyroids.³ Uremia, anemia, and carcinomatosis can also induce symptoms of depression. Conversely, depression *per se* often precipitates a search for an occult neoplasm or endocrine dysfunction, particularly when the patient's major complaints include lethargy, weakness, and weight loss. Finally, a number of drugs have been implicated in drug-induced syndromes of depression. Reserpine is probably the most familiar,⁴ but symptoms have been attributed to propranolol,^{5,6} methyldopa,⁷ diazepam,^{8,9} and various antineoplastic drugs. In some patients, potassium-wasting diuretics can induce a depressive-like syndrome attributable to severe potassium depletion.¹⁰

Because depression is a disease involving mind and body, the diagnosis should be made after careful consideration of all available emotional and physical data. Depression is neither a "wastebasket" syndrome nor a diagnosis of exclusion.

APPROACH TO PHARMACOTHERAPY: WHICH CATEGORY OF DEPRESSION?

The clinical response to antidepressant drugs depends strongly upon the category of depression being treated. Before contemplating pharmacotherapy the clinician should identify not only the presence of a depressive syndrome, but also the disease subtype. The response to antidepressant drugs is most favorable among patients with "endogenous" depression. In this disease subtype antidepressant drugs are superior to placebo, other forms of pharmacotherapy, and most non-drug treatments except electroconvulsive therapy (ECT).¹¹⁻¹³ Endogenous illness can be suspected when one or more of the following characteristics is present: a middle-aged or elderly patient, prolonged or severe symptoms, a history of recurrent depression, a family history of similar illness, the absence of an obvious precipitating cause, significant anorexia or weight loss, early morning awakening, sexual disinterest or dysfunction. In contrast, the clinical response to antidepressants in situational (reactive) depressions is much less favorable. Reactive illness is usually less severe, afflicts younger individuals, and has the following characteristics: an evident precipitating cause, difficulty falling asleep, stable body weight or weight gain. Anxiety and depression frequently co-exist, particularly in neurotic patients ("neurotic" or "anxious" depression). Antidepressant drugs probably are no more effective than benzodiazepines in patients with reactive or neurotic de-

TABLE 2

PERTINENT DATA ON TRICYCLIC ANTIDEPRESSANTS

<i>Generic Name</i>	<i>Trade Name(s)</i>	<i>Initial Daily Dose</i>	<i>Usual Maintenance Dose</i>
DIBENZAZEPINES			
Imipramine	Tofranil Tofranil-PM	75 mg	150 mg
Desipramine	Presamine Norpramin Pertofrane	75 mg	150 to 200 mg
DIBENZOCYCLOHEPTENES			
Amitriptyline	Elavil	75 mg	150 mg
Nortriptyline	Aventyl	40 to 75 mg	100 to 150 mg
Protriptyline	Vivactyl	15 mg	30 mg
DIBENZOXEPINS			
Doxepin	Sinequan Adapin	75 mg	150 mg

pression, especially when anxiety or agitation contributes significantly to the patient's discomfort.¹⁴

Assignment of correct diagnosis is not always as straightforward as the preceding discussion would suggest. Depression may be associated with a schizoid life history or thought disorder, or with manic-depressive illness as discussed earlier. These variants of depression may require different forms of pharmacotherapy, emphasizing the need for careful diagnostic evaluation.

CLINICAL USE OF ANTIDEPRESSANTS

Tricyclics and monoamine oxidase inhibitors (MAO inhibitors) are the two major categories of clinically useful antidepressant drugs. Because MAO inhibitors are less effective and more toxic than tricyclics, their use as an initial treatment in clinical practice is seldom indicated and they will not be discussed in this paper. Space does not permit elaboration of the possible role of lithium carbonate, amphetamines, thyroid hormone, antianxiety agents, and major tranquilizers in the treatment of depression.

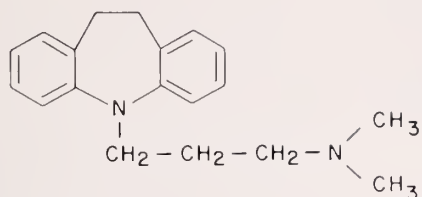
Currently available tricyclic antidepressants are listed in Table 2. (See also Figure 1.) Pharmaceutical claims notwithstanding, all have similar antidepressant activity. Non-specific sedative effects vary among the drugs from strong (amitriptyline) to weak (protriptyline). Doxepin is purported to have anti-anxiety as well as antidepressant effects, but evidence to support this is minimal. Possible mechanisms of action of tricyclic antidepressants are discussed elsewhere.¹⁵

The following considerations should guide the use of tricyclic antidepressants.

Dosage Schedules

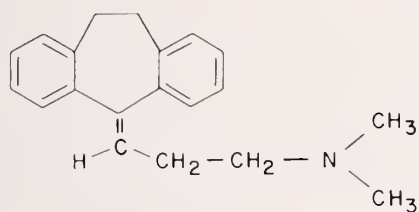
All tricyclic drugs must be given in **adequate dosage**. This usually means reaching a daily dose of 150 mg per day or more of imipramine or its equivalent (Table 2). Lower doses are not consistently effective.¹⁶ It is reasonable to initiate therapy with

DIBENZAZEPINES



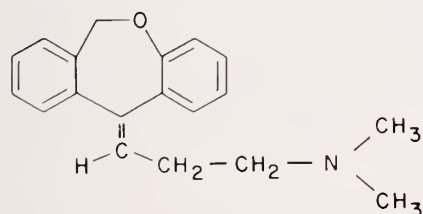
Imipramine

DIBENZOCYCLOHEPTENES



Amitriptyline

DIBENZOXEPINS



Doxepin

Figure 1. Structures of Representative Tricyclic Antidepressants Available for Clinical Use in the United States.

the equivalent of 75 mg per day of imipramine, but the dosage should be raised to 150 mg per day as soon as it can be tolerated. Occasional patients need up to 300 mg per day.

Tricyclic antidepressants are long-acting drugs with cumulative effects.¹⁷ Three or four divided daily doses are rarely necessary — the entire daily dose usually can be given at once (i.e., at bedtime) with equally good results.¹⁸⁻²¹ Patients with sleep disturbances may benefit in particular from the sedative effects of amitriptyline given at bedtime. Imipramine pamoate (Tofranil-PM[®]), a "new long-acting" form of imipramine, has been marketed and promoted for use in single daily doses.²²⁻²⁴ In fact, the less expensive, traditional hydrochloride salt of imipramine also is long-acting, and probably is clinically equivalent to the pamoate derivative.

Onset of Action

Tricyclic antidepressants exert important clinical effects on mood only after a significant lag period.²⁵ Usually 7 to 21 days elapse from the beginning of therapy before mood elevation begins to occur. Antidepressant effects seen before this time are attributable to other aspects of the therapeutic milieu. A patient who does not respond to tricyclic drug treatment cannot be considered a therapeutic failure until he has received at least three full weeks of continuous full therapeutic dosage.

In some patients mild psychomotor excitement — such as tremor, insomnia, or agitation — accompanies tricyclic therapy. This sometimes can be controlled by coadministration of a minor tranquilizer such as chlordiazepoxide (15 to 40 mg/day) or diazepam (6 to 20 mg/day), or by the beta-adrenergic antagonist propranolol (30 to 40 mg/day).*

Anticholinergic Effects

All tricyclic antidepressants have significant atropine-like effects, accounting for frequent complaints of dry mouth. The hazards of this cholinergic blocking property in patients with prostatic hypertrophy, undiagnosed or untreated glaucoma, or intestinal obstruction, should be considered before the drug is given.

Cardiac Toxicity

Many reports suggest that tricyclic antidepressants can cause a variety of conduction disturbances and ectopic tachyarrhythmias.²⁶⁻²⁸ Life-threatening arrhythmias are usually associated with overdose,²⁹⁻³⁷ but clinically important cardiac toxicity probably can occur with therapeutic doses,^{37,38} particularly in the elderly and in those with cardiac disease. The frequency of such events is not established. Some epidemiologic studies suggest that tricyclic antidepressants may increase the risk of sudden death in patients with cardiac disease,^{39,40} while others do not.⁴¹ Until further data are available, this possibility warrants careful attention. Tricyclic antidepressants should be administered with caution to elderly individuals and to patients with ischemic heart disease, particularly those with a history of arrhythmias.

Drug Interactions

A number of drug interactions have been attributed to tricyclic antidepressant therapy. In only a few cases has the clinical importance of these interactions been adequately established. Nevertheless clinicians should be aware of the following potential drug interactions during use of tricyclic antidepressants.

*Not an FDA approved indication for propranolol.

Drug Absorption. Because of their anticholinergic effects, tricyclic drugs can reduce gastrointestinal motility and alter the absorption pattern of other coadministered drugs. The absorption of phenylbutazone⁴² and levodopa⁴³ is delayed or reduced when they are given together with tricyclic antidepressants. Further studies are needed to document which other drugs are influenced by this mechanism. It is conceivable that antidepressants could enhance absorption in some cases. Bioavailability of digoxin tablets, for example, depends upon their rate of dissolution in the stomach. When gastric emptying is delayed by an anticholinergic drug, digoxin tablet absorption is enhanced because there is more time for dissolution.⁴⁴

Drug Metabolism. Studies on the influence of tricyclics on metabolism of other drugs are contradictory. Various reports have documented stimulation,⁴⁵ antagonism,^{46,47} and no effect.⁴⁸ For the present, clinicians must assume that anything is possible. Conversely, the metabolism of antidepressants is reportedly stimulated by barbiturates⁴⁹ and inhibited by major tranquilizers,^{50,51} and estrogens.^{52,53} Methylphenidate, an enzyme inhibitor, increases blood concentrations of antidepressants and potentiates their clinical effects.^{54,55} By an unknown mechanism thyroid hormone potentiates tricyclic antidepressant activity even in euthyroid patients.^{52,56-61}

Adrenergic agents. Usual doses of tricyclics can potentiate the pressor effects of certain catecholamines.⁶² The significance of this interaction is not established, but it should be considered when antidepressant-treated patients take proprietary cold preparations or receive dental anesthetic mixtures containing sympathomimetic amines.

Guanethidine. All tricyclic antidepressants partially or completely antagonize the antihypertensive action of guanethidine.⁶³⁻⁶⁷ Antagonism does not develop immediately; reversal of guanethidine's antihypertensive effect occurs only after a lag period of more than 12 hours after antidepressants are first coadministered.^{68,69} Doxepin is a relatively weak guanethidine antagonist compared to other tricyclic antidepressants.^{67,70}

Because of this interaction, concurrent therapy with guanethidine and tricyclic antidepressants is not rational.

MAO Inhibitors. Tricyclic antidepressants and MAO inhibitors reportedly enhance each other's toxicity.⁷¹ Evidence for this is based mainly upon anecdotal reports. More systematic study suggests that the hazard is exaggerated.⁷² In any event the danger can be eliminated by avoiding this combination of drugs altogether, which would hardly be a therapeutic disaster.

OTHER CLINICAL USES

The efficacy of imipramine and other tricyclic

antidepressants in the treatment of enuresis is well established.⁷³⁻⁷⁹ Other conditions for which these drugs are reportedly useful include: pavor nocturnus,⁸⁰ somnambulism,⁸⁰ narcolepsy,⁸¹ insomnia,⁸² asthma,⁸³ hyperkinetic behavior disorders in children,^{84,85} parkinsonism,⁸⁶ headache,⁸⁷⁻⁹⁰ chronic pain,⁹¹⁻⁹³ alcoholism,^{94,95} petit mal and minor motor seizures,⁹⁶ preoperative anxiety,^{97,98} and phobic anxiety associated with panic attacks.⁹⁹ The Food and Drug Administration has not approved the use of tricyclic antidepressants for any of these indications, with the exception of enuresis.

COMMENT

Tricyclic antidepressants are an effective, relatively inexpensive somatic therapy for endogenous depression. Although they are not without some risk, the hazards of tricyclic drug therapy are usually outweighed by the potential benefits. It must be remembered that tricyclic drugs are not the most effective somatic therapy. Although more hazardous and more expensive, ECT is more consistently effective. Patients with disabling depression who fail to respond to tricyclic antidepressants should be considered as candidates for ECT.

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A CASE OF UNILATERAL PULMONARY EDEMA — *Continued from Page 272*

patient did have long-standing chronic obstructive disease which doubtless had an effect on the pulmonary, bronchial and lymphatic circulation to his lungs. It may also have changed the permeability of the alveolar membranes. While infectious factors doubtless contributed, we were unable to isolate a bacterial pathogen and careful virus studies were unrewarding. Since we were unable to establish the date of the pneumothorax, it is possible that it was present long enough to disturb surfactant, surface tension, and alveolar permeability. Under these conditions, it is possible that the modest 15 cm. negative pressure of water was sufficient to draw edema fluid out of the pulmonary capillaries and into the alveolar spaces.

What can be gleaned from this experience is that the prudent physician will re-expand a collapsed lung slowly with gentle negative pressure; and, if

there is any doubt, use generous amounts of a diuretic-corticosteroid combination to dry the lungs and stabilize the permeability of the capillary membranes.

CONCLUSION

A case report of unilateral ipsilateral pulmonary edema which followed the re-expansion of a lung collapsed by pneumothorax.

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Home Health Care

Now, you don't have to go to the hospital when illness strikes. In many instances, the hospital will come to you.

Under a unique and innovative program, Mercy Hospital has just completed its pilot Coordinated Home Health Care Program and established the home care service as a permanent factor in the treatment of patients from all hospitals in the area, in addition to patients referred directly by their physicians.

Headed by Eleanor Gaffney, former Director of Nursing at Lemuel Shattuck Hospital in Boston, the program this year became permanent with the signing of a new contract with Associated Hospital Services of Maine, Inc., (Blue Cross and Blue Shield), which entered into the program with Mercy in early 1972.

Union Mutual and other major companies have also joined the program, in fact, Union Mutual was involved in the program from its beginning. Patients under 65, as well as Medicare and Medicaid, are covered for Coordinated Home Health Care as an option to hospitalization.

The result has been a shortening of hospital stays for many patients, with hospital-type services being offered in their own homes where conditions permit. Additionally, it has allowed physicians to refer their patients directly to Home Health Care, rather than to hospitalization.

Mercy's Coordinated Home Health Care Program replaced the hospital's own Home Medical Services Program and broadened its scope to involve other hospitals and all physicians with full insurance coverage for the patients. Under the new arrangement, direct nursing service, as previously provided by Mercy Hospital for only its own patients, was phased out, and contractual arrangements were made with community agencies to take care of the required professional services "in the field."

Participating in the new program are: Community Health Services of Portland, Inc., which covers Westbrook, Scarborough, Portland, Cape Elizabeth and Bridgton, as well as a rapidly expanding area of Cumberland County. Executive Director and guiding spirit of this program is Mrs. Wilma Jordan. The South Portland area is served by the South Portland Public Health Nursing Association, under the leadership of Heloise Withee, R.N., Executive Director.

During the pilot period of the program last year, a total of 264 hospital patients were treated at home and had been referred from Maine Medical Center, Portland City Hospital and Osteopathic Hospital, in addition to Central Maine General Hospital, Massachusetts General, Peter Bent Brigham, National Medical Care of Portland, Jewish Home for the Aged and Devonshire Manor Nursing Home. Fifty-one patients were referred directly to the program by area physicians, thus shortening the hospitalization or placement in nursing homes of these patients.

Working closely with Sister M. Consuela, Director of Patient Services, Miss Gaffney is administrator of a team consisting of two registered nurses: Shirley Brochu, R.N., and Margaret Wagner, R.N.; in addition, a staff consisting of Robin Kerrick, Occupational Therapist, and Cathy Bruckner and Richard Hart, both Registered Physical Therapists.

"The important aspect of the program is that all of our energies and services are focused on an individualized plan of care and treatment for each patient, under the guidance and direction of his attending physician," said Miss Gaffney. "We are also working closely with the hospital personnel and the Public Health nurses, freeing them from time consuming administrative detail which takes them away from direct patient care."

"Weekly team conferences with all persons involved in the care of the patient in the home are held to discuss the patient's needs with our medical advisor, Thomas F. Conneen, M.D. Patients in need of care are never refused on the basis of inability to pay. A social worker, Katherine Greeley, M.S.W., works closely within the program to obtain the necessary assistance."

"To the hospital, the benefits of the new home care program are obvious — it reduces the number of days a patient needs to stay in a hospital bed, thus allowing for better utilization of hospital rooms and equipment, and to the physician it provides an option other than hospitalization in many cases," said Miss Gaffney.

For the physician, it works in this way: Once he makes the decision to refer a patient to the Coordinated Home Health Care Program, he contacts the coordinator who starts the entire flow of patient services. The physician, coordinator, hospital nurse, social worker, patient and family all help to determine the plan of care before the patient is accepted into the program.

Home conditions and facilities are, of course, a vital part of this consideration and the program is able to assist qualified patients through daily calls by local nursing association staff members.

While the visiting nurse cannot act as a housekeeper, she is in the position to supervise the home health aide who may be caring for the patient.

Once a decision is made to enroll a patient in the program, the coordinator develops a comprehensive plan of action and orders the needed equipment and supplies for home care, she counsels the family in getting the home ready and makes a direct referral to the community health agency for nursing and other therapies. Since she has become an integral part of a developing plan for care, the first step is a nursing evaluation upon the patient's arrival at home.

The physician in turn can budget his time more efficiently by delegating some tasks to other members of the home care team, while receiving full written reports on his patient's condition from the Coordinated Home Health Care Team Conference, held weekly to evaluate the individual progress of all patients. Signing and returning one copy, the physician makes his comments and recommendations for the team's course of action.

Miss Gaffney speaks of this new program with great enthusiasm. "In the busy, modern day and age, hospital care frequently becomes somewhat impersonal and rushed because of the high costs which go with the operation of all big institutions," she says. "The Coordinated Home Health Care Program, which we call 'Medicine With A Heart,' offers the patient a new sense of dignity and individual, relaxed care in his own environment and the presence of his own family and friends — a vanishing element in our society in recent years."

"From the old country doctor and home-care system, the pendulum has swung all the way in one direction where home care was virtually extinct, and hospitalization seemed the only answer."

"Now, it seems that this program has provided a pleasant middle ground where the patient can receive the full services of hospital care and still be at home with his family and receive the same standard of medical assistance as he would have if he were in the hospital."

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Permanent Cardiac Pacing

Five-Year Experience at a Regional Hospital

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Permanent cardiac pacing systems have been used clinically for the treatment of Stokes-Adams attacks since the first insertion of a completely implantable cardiac pacemaker by Chardak in 1960.¹ Implantation of permanent pacemakers is now a well-established procedure and as a result of these devices, the quality of life and the prognosis of patients with Stokes-Adams attacks due to complete heart block and other cardiac arrhythmias, has been improved.²⁻¹⁰ Although electrical pacing of the heart is not without hazard, engineering improvements and increasing familiarity with cardiac pacemakers have decreased the risks considerably so that these procedures that were initially confined to medical centers have become commonplace at smaller regional and community hospitals.

The purpose of this report is to describe the experience with permanent cardiac pacing at the Eastern Maine Medical Center over a five-year period with particular reference to the benefits, complications and morbidity of this procedure.

MATERIAL AND METHODS

From January 1970 to December 1974, a total of 159 permanent pacemaker pulse generators were implanted in 98 patients. Some of these patients were also treated with temporary pacing systems at sometime during the course of their illness. Sixty-one pulse generators have been replaced. Some of these patients have required more than one pulse generator replacement during this time and in some

instances their initial pacing system was implanted elsewhere. The majority of patients were referred because of syncope or dizziness, often with coexistent heart failure. Four patients required a pacing system for treatment of intractable ventricular or supraventricular tachycardia.

A variety of heart diseases was present and criteria were established for these diagnoses. Coronary artery disease was defined by either QRS changes on electrocardiogram or cardiac enzyme elevation indicative of myocardial infarction or a history of angina pectoris. Idiopathic heart disease was a diagnosis of exclusion. Hypertension was defined by the presence of at least two blood pressure recordings greater than 140/90 mmHg. Congestive heart failure was defined by the presence of two of the following findings: history of paroxysmal or exertional dyspnea responsive to digitalis and/or diuretics, chest x-ray changes, or S3 gallop. The diagnosis of rheumatic heart disease was accepted if characteristic heart murmurs were present in conjunction with a history of rheumatic fever. Coexisting conditions were often present and the most frequent ones included diabetes mellitus, chronic bronchopulmonary disease, cerebral vascular disease, peripheral vascular disease and chronic congestive heart failure. Three patients had associated seizure disorders with abnormal EEG findings. Patients were referred from the Bangor area and from seventeen smaller community hospitals.

Both Medtronic and Cordis pacing systems were used. One patient required a specially constructed pacemaker manufactured by General Electric.¹² Most pulse generators were of the demand type and the pacing catheters were inserted transvenously where possible. The transthoracic approach was required on two occasions for the implantation of

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epicardial electrodes and in one instance, transmediastinally.

Initial implantations were performed in the X-ray department with image intensification fluoroscopy, sterile technique and locally administered lidocaine anesthesia. Pulse generator replacements, trans-thoracic and transmediastinal implantations were performed in the operating room. The transvenous electrodes were introduced via the cephalic or external jugular vein to the apex of the right ventricle using image intensification fluoroscopy. Occasionally it was necessary to use the axillary vein. Electrode position was accepted only when the tip of the catheter was curved downward, when the pacing threshold was less than 1 to 1.5 ma. (Medtronic No. 5880 portable pulse generator) and when pacing produced the "left bundle branch block complex" as recorded from the surface electrocardiogram lead V-1. After June 1971, intracardiac recordings were made from the tip of the pacing catheter as suggested by Gulatta in an effort to avoid unintentional coronary sinus placement.¹¹ Catheter position was adjusted to avoid redundancy, the guide wires were removed and the catheter position and threshold rechecked. Cross-table lateral and PA chest x-rays were performed for confirmation of catheter tip position at the time of implantation and standard PA and lateral chest x-rays were taken prior to hospital discharge. The catheter was fixed securely to the vein, the pulse generator buried subcutaneously over the upper chest wall and the incisions were closed without drainage. Antibiotics were administered prophylactically beginning immediately after the procedure and continued for 5 days. The patients were confined to bed for 24 hours and during this time the electrocardiogram was continuously monitored. Patients were encouraged to be ambulatory the day following surgery if no contraindication existed and routine 12 lead electrocardiogram was performed. Patients with an uncomplicated course had their sutures removed when discharged on the seventh postoperative day. Anticoagulants were not used. Note was made of the generator model, type of electrode catheter, threshold measurement, standard EKG and intracardiac recordings and radiographic position of the electrode catheter before patients were discharged from hospital. At the time of pacemaker pulse generator replacements, note was made of the threshold and of the underlying rhythm. Patients were followed in the physicians office at three to four-month intervals during the first twelve to eighteen months after implantation and more frequently toward the end of the expected pulse generator life span or as signs of battery exhaustion appeared. Visits to the physicians office were often supplemented by the use of telephonically transmitted 12 lead electrocardiograms which could be compared with previous records. Ordinarily pulse generators were re-

TABLE 1

AGE DISTRIBUTION OF PATIENTS BY DECADE

Less than 40	2
40-50	4
51-60	9
61-70	25
71-80	38
81-90	16
91 and over	4

TABLE 2

ELECTROCARDIOGRAPHIC ABNORMALITIES RECORDED
PRIOR TO PACING

CHB	26
LBBB	5
LBBB + 1°, 2° AVB	6
LBBB + LAH	2
RBBB	3
RBBB + 1°, 2°, AVB	3
RBBB + LPH	4
RBBB + LPH + 1° AVB	1
RBBB + LAH	4
RBBB + LAH + 1° AVB	11
1°, 2° AVB	17
VSR (SB, SA, SAF)	35
Transient VF/VT	5
Bradycardia-Tachycardia	9
PAT	1
VT (recurrent)	3

CHB — complete heart block, LBBB — left bundle branch block, AVB — Atrioventricular block, LAH — left anterior hemiblock, USR — unstable sinus rhythm, SB — sinus bradycardia, SA — sinus arrest, SAF — slow atrial fibrillation

placed when there was evidence of pacemaker malfunction such as an increase in rate, loss of sensing function or slowing of pacer rate greater than 10%. In some instances, these indications were modified by the patient's age, his ability to participate in frequent follow-up evaluations, the distance of the patient's home from the medical center, anticipated travel out of the country and other social factors.

RESULTS

Patient Characteristics

The average age of patients requiring permanent cardiac pacemakers was 71 years. The youngest patient was 17 (congenital heart block) and the oldest was 96. The age distribution is shown in Table 1. The majority of patients (60 of 98) were in the seventh and eighth decade. The four patients over age 90 were all alert and active prior to the pacemaker implantation and have remained so.

All patients had a history of syncope, sometimes recurrent, except two who were paced for symptoms of chronic congestive heart failure associated with slow atrial fibrillation and one patient with recurrent paroxysmal atrial tachycardia.¹² Most of the patients in all age groups had heart disease of unidentifiable cause as the basis for their high degree AV conduction defect. There was a high incidence

TABLE 3

PATIENTS WITH ABNORMALITIES OF SINUS RHYTHM

Age	EKG Abnormalities
88	CHB + AF
67	CHB + 1° AVB + SA, SB
76	LBBB + AF
80	LBBB + AF
60	LBBB + AF
58	LBBB + SVT, SA, SB
55	LBBB + 1° AVB, SB, AF
66	RBBB + AF
70	RBBB + AF
80	RBBB + 1° AVB, SA
74	RBBB + LAH + SB
68	RBBB + LAH (CHB) + SA, SB
81	RBBB + LAH + 1° AVB, SA, SVT
72	RBBB (CHB) + 1° AVB, SA
55	LAD + SA, SB
74	LAD + 1° AVB, SB
67	SB + PAC + LAH
76	SB + 2° AVB
48	SB, PAC
69	SB
83	SB, AF
60	SB, PAC
73	SB, AF
56	SB + 2° AVB
69	SB, SA, AF
79	AF + 1° AVB
89	AF + 1° AVB
38	PAT
74	PAT, AF
71	PAF
74	PAT, AF, SB, SA
47	PAT, PAC, SB, SA
75	SVT, SB
67	PAF
69	AF, SB, SA

CHB — complete heart block, LBBB — left bundle branch block, AVB — Atrioventricular block, LAH — left anterior hemiblock, USR — unstable sinus rhythm, SB — sinus bradycardia, SA — sinus arrest, SAF — slow atrial fibrillation

of associated coronary artery disease (45% of all patients) and other associated conditions included rheumatic heart disease, hypertensive cardiovascular disease and congenital heart block (one patient). Only one patient required permanent pacing for persistent complete heart block following acute myocardial infarction.

Indications

All patients except for two patients with chronic congestive heart failure and one patient with paroxysmal tachycardia had history of syncope. Electrocardiographic abnormalities recorded prior to pace-

maker implantation are listed in Table 2. The most common abnormality was complete heart block which was recorded on at least one occasion in 26 patients. In seven patients, complete heart block was transient and intermittent. Other types of atrioventricular and intraventricular block were recorded commonly, the most frequent being right bundle branch block in association with AV block and right or left axis deviation. In five instances, the rhythm recorded during the syncopal episode was ventricular fibrillation or ventricular tachycardia. One patient required intermittent permanent atrial pacing (patient induced) to terminate frequent episodes of rapid paroxysmal atrial tachycardia. Nine patients had syncope associated with alternating episodes of sinus bradycardia and supraventricular tachycardia (bradycardia-tachycardia syndrome) unassociated with intraventricular conduction defects. Approximately one-third of the patients with syncope and intraventricular conduction disturbance had associated abnormalities of sinus rhythm including slow and rapid atrial fibrillation, sinus bradycardia, sinus arrest, paroxysmal supraventricular tachycardias and frequent premature atrial contraction (Table 3). Eight patients with a history of syncope and normal AV conduction had unstable sinus rhythm with sinus bradycardia and no evidence of supraventricular tachycardia. In at least five instances, patients with intraventricular conduction defect had sinus arrest or marked sinus bradycardia as the cause of their syncope on at least one occasion rather than intermittent complete heart block as would be expected.

Pulse Generators

A total of 159 pulse generators were used in this group of patients (Table 4). A majority of the units were demand type rather than fixed rate pulse generators. Initially, Cordis units were used more frequently but in the past eighteen months Medtronic units are being used preferentially (see complications). A few fixed rate units were employed as replacements in patients with stable complete heart block and no evidence of competition. The Medtronic bipolar catheter was considered rather large and unwieldy and more recently the unipolar system has been preferred.

Symptomatic Results

The improvement in the cardiac, cerebral and

TABLE 4

PACEMAKER PULSE GENERATORS

General Electric		Cordis Ectacor		Ventricor	Stanicor	Medtronic				
	129C7	144C7	144G7			5945	5944	5943	5942	5910, 5862-C
1	1	70	9	3	4	43	1	4	16	5870-C
										7

general condition of the patients has been uniform and more marked in patients with very slow rates and low cardiac output. Syncopal episodes were abolished and have not recurred in patients with functional pacemaking systems. In three patients, seizures have occurred postoperatively associated with EEG abnormalities and these are thought to represent associated seizure disorders. Many patients require cardiovascular drugs for control of associated heart failure or supraventricular arrhythmias. The follow-up period of most of these patients is brief and no comment on longevity can be made.

Hospital Stay

The average duration of hospital stay for patients receiving their first permanent pacemaking system was 13 days. An effort was made to discharge patients with an uncomplicated course on the seventh postoperative day. Often several days were required to document the need for permanent pacing and to control associated illnesses. The average stay for patients requiring replacement of pacemaker pulse generator was seven days. Patients were usually kept in the hospital until their sutures were removed unless special arrangements were made with the referring physicians.

Complications – (Table 5)

Displacement of the catheter tip requiring repositioning the catheter was the most frequent complication and occurred on 11 occasions in nine patients (nine of 98 patients, 9%). The 11 incidences of electrode displacement tended to occur early, six within four days of installation, and one each at 15, 20, 21, and 57 days. One late displacement occurred 45 months after implantation just prior to replacement of the second pulse generator. In this case, the pacing rate had slowed to 66, intermittent capture was rated and chest x-ray showed probable displacement of the catheter tip since the previous examination eight months earlier. Pacing threshold was 7 ma. and catheter recordings showed both electrodes to be intact. Catheter tip displacement was assumed and transmediastinal electrode placement was elected. There was no difference in postoperative activity between patients who had catheter displacement and those who did not. Multiple displacements occurred in two patients. Six of the nine catheters which became displaced were unipolar rather than bipolar catheters.

Wire fracture within the pacing catheter occurred on two occasions and in both instances involved the Cordis unipolar catheter.

Four patients developed hematoma in the wound around the pacemaker postoperatively. In none of the patients was there any abnormality in the usual clotting factors. Two patients required drains (HEMOVAC®) and in both patients when the wound was open subsequently for catheter reposi-

TABLE 5

COMPLICATIONS

Catheter Displacement	11 (9 patients)
Electrode Fracture	2
Wound Hematoma	4
Difficult Lead Terminal/Pulse	
Generator Disconnection	6
Extrusion of Pulse Generator	7 (5 patients)
Faulty Sensing	1
Wound Infection	1 (?)
Deaths (30 days)	3
Myocardial Perforation	1 (?)

tion the drainage was found to be incomplete and considerable hematoma persisted around the pulse generator. One patient required needle aspiration of the hematoma on three occasions postoperatively. In one other patient, hematoma was discovered incidentally at the time of catheter reposition. One of the hematomas became subsequently infected.

At the time of pulse generator replacement, difficulty was encountered on five occasions in removing the proximal end of the catheter tip from the pacemaker pulse generator housing. Considerable delay resulted and without extreme care the catheter might have been damaged and replacement or splicing required. In each instance, the pulse generator was manufactured by Cordis. Removal was accomplished by carving away a portion of the epoxy pulse generator covering and driving out the proximal catheter terminal with a punch.

On one occasion, in spite of adequate electrode position and low threshold, faulty sensing required replacement of the pulse generator with a special low sensitivity unit (Cordis Ectacor 144H7).

In only one patient was there evidence of infection following the initial pacemaker implantation. This was manifest as slight redness and tenderness around the wound which persisted for several weeks and pulse generator replacement was performed at another hospital. No culture results are available.

Three patients died in the first month following pacemaker installation (3%). One patient died suddenly of presumed myocardial infarction one month postoperatively. One patient for whom ventricular pacing was initiated to suppress recurrent episodes of ventricular tachycardia died 10 days postoperatively and autopsy showed extensive acute myocardial infarction. One patient died one week postoperatively. Pacing was required to control recurrent complete heart block which persisted following myocardial infarction and autopsy showed extensive recent myocardial infarction. Two patients required thoracotomy for epicardial implantation of the pacing electrode. In both instances, the postoperative complications were typical of thoracotomy including atelectasis and pleural effusion and pleuritic chest pain and three weeks of postoperative hospitalization was required. One patient had

TABLE 6

PULSE GENERATOR REPLACEMENTS
(61 PULSE GENERATORS)

Battery Depletion (slowing)	43
Loss of Sensing	4*
Elective (@24 months)	7
Acceleration	2
Electrode Fracture	2
Extrusion	7

*Associated with rate decrease/increase

placement of epicardial electrodes transmediastinally and, although his early convalescence was complicated by postoperative fever, pleuritic pain and atelectasis, he was discharged on the eighth hospital day.

Perforation of the myocardium by the pacing catheter was thought to have occurred on only one occasion. On the fifth postoperative day pericardial friction developed in association with intermittent loss of pacing and catheter reposition was required. At the time of catheter reposition, the threshold had increased from 0.5 ma. to 6 ma. Pacing was reestablished and convalescence was uneventful.

Pulse Generator Replacements

Replacement of the pulse generator was required on 61 occasions and in most instances this was due to premature exhaustion of the pulse generator batteries (Table 6). Failure of the pulse generator was considered in instances of ineffective pacing not due to lead displacement or fracture or demonstrable change in the myocardial threshold. The incidence of such failure was low in the first 18 months after implantation (22%) but increased between 18 and 24 months. Seven pulse generators were replaced electively at 24 months. The average duration of the life of the batteries was 22 months. In almost all cases, the pulse generators were replaced on semielective bases when evidence of malfunction first appeared and before the recurrence of symptoms of cerebral ischemia. No patient died as a result of premature pacemaker failure. Pulse generator failures were for the most part manifest by a gradual drop from the rate set at implantation or an intermittent drop over a period of several days or weeks. On two occasions, failure of a component of the pacemaker assembly occurred and was manifest by an increase in pacing rate. Two of these units, Cordis Ectacor, increased to pacing rate of 75 and 94 and the other, a Medtronic fixed rate unit, was pacing, irregularly between 77 and 88 per minute. Four pulse generator replacements were required because of malfunction of the sensing circuit. In three instances (one Medtronic 5943, two Cordis Ectacor), loss of sensing function was associated with a decrease in pacing rate and in one unit (Cordis Ectacor), the pacing rate increased. In all instances, malfunction of the sensing circuit was associated with a rate change.

Extrusion of the pacemaker pulse generator occurred on seven occasions several months after implantation requiring relocation of the pulse generator in the axilla or on the abdominal wall. One patient who extruded her pacemaker on three occasions, was quite thin but the other four patients had apparently normal amounts of subcutaneous tissue. Resultant wound infection which occurred in four patients was controlled with the use of temporary wound drains and long-term antibiotics. In some instances, when the extrusion occurred near the expected life of the pacemaker pulse generator, the pulse generator was changed electively. Fracture of the catheter electrode wire occurred twice, at 9 and 25 months. Both catheters which failed were Cordis unipolar models, one implanted in 1971 and one in 1973.

Coronary Sinus Placement

In two patients, the electrode catheter tip was placed within the coronary sinus intentionally, one in whom pacing was used for control of ventricular tachycardia and another in whom no stable position within the right ventricular cavity could be found. In nine patients, the catheter was placed within the coronary sinus inadvertently. In seven of these patients, the pacing threshold was less than 1.5 ma. In one patient, the initial threshold was 3 ma. In a second patient, the threshold was 2.5 ma. at the time of pacemaker pulse generator replacement 26 months after the initial catheter placement. Only one of the nine patients in whom coronary sinus placement was unintentional, had intracardiac recording at the time of the catheter placement, a maneuver which would have confirmed the location within the coronary sinus.¹¹ In each instance, the catheter tip position by fluoroscopy was "satisfactory" though on closer inspection the catheter tip usually assumed a lower position than usual and the lateral view showed medial or posterior catheter position rather than the usual anterior position seen when the catheter is within the right ventricular cavity (Figure 1). One patient with coronary sinus catheter placement paced the right atrium rather than the ventricle. Five patients paced the ventricle with a "left bundle branch block complex" and five patients paced with a "right bundle branch block complex." On two occasions at the time of pulse generator replacement, intracardiac recordings were made. On both occasions, a positive deflection was recorded suggesting coronary sinus placement though one of these patients paced with a "right bundle branch block complex" and the other with a "left bundle branch block complex."

Complications in this group of patients with coronary sinus catheter placement were frequent. Three patients had troublesome diaphragmatic pacing and three patients had unreliable pacing requiring replacement of the electrode catheter. There were no



Fig. 1. PA and lateral chest x-rays showing right ventricular placement of catheter tip. Note the anterior position of the catheter tip in the lateral view.

instances of premature pulse generator failure. One patient in whom the initial threshold was 1.5 ma. required pulse generator replacement at 19 months because of battery depletion. Three other pulse generators were replaced between 26 and 27 months. Although no post mortem studies are available, there was no known instance of coronary sinus perforation or thrombosis.

DISCUSSION

It has been estimated that 50% of patients with Adams-Stokes attacks die within one year after seeking medical advice.¹³ Various medical programs including atropine, ephedrine and epinephrine have been used to treat these patients and none has proven entirely satisfactorily. While present day cardiac pacemakers are far from perfect, these devices have given gratifying results when used to treat patients with Adams-Stokes attacks.

Indications

Adams-Stokes syndrome is defined as the occurrence of cerebral symptoms, usually syncope or dizziness, in patients as a result of cardiac rhythm abnormalities.¹⁴ During the syncopal attack, the electrocardiogram may show a variety of cardiac arrhythmias including complete heart block, marked sinus bradycardia or sinus arrest, ventricular fibrillation or tachycardia or ventricular standstill.¹⁵⁻¹⁷

These arrhythmias are the result of either disorders of cardiac impulse formation within the sinus node or disorders of impulse conduction. Normally the sinus node impulses are transmitted by way of the A-V junction (node) through the bundle of His to the branches of the intraventricular conducting system. According to the tri-fascicular concept, the bundle of His divides into three fascicles, the right bundle branch and two branches of the left bundle branch, the anterior and posterior divisions.¹⁸ Complete heart block can be the result of a single conduction defect in the AV node or bundle of His or a combination of conduction defects in several of these fascicles simultaneously. It appears that fascicular block rather than block within the AV node or bundle of His is the more common cause of complete heart block.¹⁹ Often these conduction defects are intermittent or transient so that none is present by the time the patient is examined following his syncopal attack. Although complete heart block was probably the most common cause for syncope in our patients, this rhythm was actually recorded in only 26, and in 7 patients this rhythm was intermittent.

Many of these patients with Adams-Stokes attack due to intermittent cardiac arrhythmias have electrocardiographic evidence of impaired conduction between attacks which may serve as a clue to the etiology of the syncope.²⁰ Based on the tri-fasci-

cular concept, there are several types and combinations of conduction defects possible. The frequency of subsequent complete heart block seems to be greater when the preceding conduction defect is a combination of right bundle branch block plus an associated block in either the anterior or posterior division of the left bundle branch. The frequency of complete heart block is even greater when AV block is also present.²¹

In our patients, 26 had complete heart block when first seen and no prior electrocardiogram was available for comparison (Table 2). In others, when previous electrocardiograms were available, conduction defects were frequent and included right bundle branch block plus either left anterior or posterior hemiblock (20 patients), left bundle branch block or right bundle branch block often associated with AV block (19 patients), and AV block of first or second degree (17 patients).

It is important to appreciate that before heart block becomes complete, conduction may be intermittent in any combination of the three fascicles or the AV node. Thus, there may be transient or intermittent left anterior hemiblock, left posterior hemiblock, complete left bundle branch block, right bundle branch block or combinations of these defects producing incomplete bilateral bundle branch block or incomplete tri-fascicular block.

The etiology of conduction defects in our patients was not known for certain though there was a high incidence of associated ischemic heart disease (45%). This has been true of other series as well.²¹ The usual histological findings especially in patients with bilateral bundle branch block seem to be fibrosis in the intraventricular septum. In some patients, as emphasized by Lenegre, there is a non-specific "sclerodegenerative" process in the septum involving the conducting system without clear evidence of ischemic heart disease.¹⁹

Congenital heart block, when it occurs, is usually associated with other congenital defects in the heart. Some patients, however, have otherwise normal hearts. In this latter group, the QRS complex is of normal or only slightly prolonged duration. The ventricular rate tends to be faster than in patients with acquired heart block and the heart rate increases slightly in response to exercise or atropine. Such patients are usually asymptomatic. In one series of 61 patients, only three eventually developed Adams-Stokes attacks.²² The only patient in our series with congenital heart block was a 17-year-old girl who had a syncopal attack while driving and wrecked her car. At the time of arrival in the hospital, complete heart block was present with a ventricular rate of 35 to 40 and QRS duration of 0.10 seconds. Previous electrocardiograms had shown 2 to 1 AV block.

Of interest to us was the large group of patients with intraventricular conduction defects who also

had associated disorders of sinus rhythm (Table 3). Five patients with intraventricular conduction defects had sinus arrest or marked sinus bradycardia recorded as the cause of their syncope rather than complete heart block as would be anticipated. Most of these patients were in the older age group.

This association of sinus node dysfunction and intraventricular conduction defect has been stressed, though from another point of view, by Rosen and others who suggest that patients with supraventricular bradycardia and syncope should be paced from the ventricle rather than the atrium because of the high incidence of associated though not otherwise apparent intraventricular conduction defects.²³

Some patients with sinus node dysfunction, nine in this series, have in addition to supraventricular bradycardia, episodes of recurrent symptomatic tachycardia as well — the so-called "bradycardia-tachycardia syndrome" (Sick-sinus syndrome). This condition, hardly recognized as a significant clinical entity a few years ago, has become a rather frequent indication for cardiac pacing, accounting for 15 to 20% of patients in some series.²⁴ Patients with this condition exhibit a wide variety of rhythms from normal sinus rhythm to severe sinus bradycardia with sinus arrest or sinus block and sporadic bursts of supraventricular tachycardia, atrial fibrillation and flutter. They frequently present with a vague history of palpitations, dizziness or congestive heart failure and occasionally syncope. Many have associated first degree AV block. Non-specific abnormalities of P wave morphology are frequent. The treatment of bradycardia-tachycardia syndrome with drugs is difficult. Drugs such as digitalis and Propranolol used in an attempt to control the supraventricular arrhythmia may aggravate bradycardia and drugs used to accelerate the heart rate such as atropine or Isuprel[®] may precipitate the supraventricular tachycardia. In patients with bradycardia-tachycardia syndrome, cardiac pacemakers can be used to control the bradycardia allowing aggressive administration of antiarrhythmic drugs to prevent the episodes of supraventricular tachycardia.^{25,26}

One of our patients, a young man with a cardiomyopathy and recurrent supraventricular tachycardia, was treated with a permanent atrial pacing system which could be activated on demand to interrupt episodes of tachycardia which had proved resistant to antiarrhythmic drugs.

Recurrent ventricular tachycardia refractory to drug treatment has been successfully treated with cardiac pacing.^{16,27} The proposed mechanisms for the prevention of ventricular tachycardia by pacing include overdrive suppression of ectopic foci, shortening of the refractory period with an increase in the threshold for ectopic beats and the elimination of asynchronous areas of excitation and recovery. The right ventricle has been the site most

commonly used and a pacing rate of 100 per minute has usually been effective in suppressing the ventricular tachycardia. Three of our patients were paced in an attempt to prevent ventricular tachycardia after the usual drug treatment had failed. Two patients died, one within a few days and one within two months both of myocardial infarction and in both patients autopsy showed extensive coronary artery disease.

Pacing Systems

Pacemaker pulse generators are of two basic types — fixed rate and demand units. Fixed rate pacemakers discharge at a regular preset rate regardless of cardiac activity. Thus, if the patient has occasional conducted beats, there is the potential hazard of pacing impulses occurring during the vulnerable period causing ventricular fibrillation.^{28,29} Fixed rate pacemakers have a slightly longer battery life but because of the dangers of competition they are rarely used. Occasionally, fixed rate units are recommended for patients with stable complete heart block. However, in patients with complete heart block who are paced, as many as 25% develop normal conduction and competition would occur.² This restoration of conducted rhythm, at least intermittently, was documented in 6 of our patients. In some series, there is a five-fold increase in the incidence of sudden death in patients with fixed rate as opposed to demand units and this increased mortality is thought to be related to competition.²⁹

The risk of ventricular fibrillation can be obviated by using demand pacemakers. There are two types of demand pacemakers. The R-wave inhibited and the R-wave synchronous units. The R-wave inhibited pacemaker is constructed so that the pacemaker activity is suppressed by electronic signals from the heart. In the absence of a spontaneous QRS complex, a pacing stimulus is produced within a preset period. R-wave synchronous pacemakers emit an impulse into the absolute refractory of QRS complexes. In the absence of a signal from the heart, the unit reverts to its own automatic rate and paces.

Most pacing electrodes are inserted transvenously into the right ventricle. Occasionally the electrodes must be attached directly to the heart via the transmediastinal approach or thoracotomy though the complication rate and mortality of these approaches are considerably higher and the hospitalization longer.³⁰

Complications

Although the overall experience with cardiac pacing has been gratifying and the response quite satisfactory, a number of complications have occurred³¹ (Table 5). At the present time, the major source of serious complications is the pacing catheter. Nine of our patients have lost effective pacing

on eleven occasions because of change in catheter position and repositioning was required (10%). The incidence of catheter displacement is somewhat lower than that previously reported.^{5,31} Electrode displacement tends to occur early in the postoperative period prior to the formation of intracardiac adhesions. Late displacement occurred in one of our patients 45 months after implantation. In most instances, it was the unipolar rather than bipolar catheter which became displaced and this may be related to the stiffness of the catheter though comparison is difficult since the unipolar catheter was used more often. Electrode fracture occurred on two occasions and in both instances effective pacing was lost.

Surgical complications in the postoperative period were infrequent and included four instances of hematoma formation in the pocket containing the pulse generator and only one instance of wound infection. None of the patients with hematoma had demonstrable defects in coagulation. The low incidence of wound infection may be related to the routine use of "prophylactic" antibiotics.

Erosion of the skin and extrusion of the pulse generator occurred on seven occasions in five patients, usually several months after implantation. In each instance, the wound appeared infected and the organism most frequently cultured was coagulase negative staphylococcus. The pacemaker pulse generator was repositioned either in the axilla or in the abdominal wall but the pacing catheter was not replaced. Appropriate antibiotics were given, the wound was drained temporarily and all healed without incident.

One rather troublesome complication which occurred at the time of pacemaker replacement on five occasions was difficulty in removing the catheter from the pulse generator which was to be replaced. This has not been previously reported. In each instance, the pacing system was manufactured by Cordis and 15% of units replaced were involved. Traction on the catheter could have fractured or damaged the catheter and required catheter repair or replacement. In each instance, considerable delay occurred while the epoxy pulse generator housing was partially carved away with a scalpel so that the proximal catheter terminal could be disconnected.

Replacement

Once permanent pacing has been established the physician is faced with a long-term responsibility. Any malfunction of the pacemaker has potentially serious consequences. Although the reliability of the pulse generator is guaranteed by the manufacturer, malfunctions occur and careful follow-up of the patients with these devices is essential.

Premature depletion of the pacemaker pulse generator battery is the commonest cause of pacemaker

malfunction. Although pacemaker design and dependability have improved considerably, battery depletion still limits the average life of the pulse generator to 19 to 25 months. Few generators survive longer than 2 to 2 and one-half years.⁵⁻⁹ Impending failure may be inferred from standard EKG tracings if there is a change in the rate of pacing. Although older units had the potential to "run away," most units now manifest battery depletion by decreasing rate of pacing.

Battery depletion occurred in our patients on 43 occasions and was the most common cause of pacemaker replacement. This was usually manifest as a slowing of the pacing rate though the pacing rate increased slightly on two occasions probably as a result of component failure. Ordinarily the rate slowed gradually over a period of a few weeks but in a few patients the rate decreased precipitously once slowing began. One unit slowed gradually over 12 months from 72 to 66 where it remained stable for 9 months before it slowed suddenly to 60 in a period of 8 weeks.

The average duration of the battery life in our patients was 22 months. Most units were the demand type and too few fixed rate units were used to make a meaningful comparison. All of the premature failures (prior to 17 months) involved Cordis Ectacor units.

Threshold measurements were made at the time of the pulse generator replacement and averaged 1.5 ma. The threshold in those units failing prematurely averaged 1.3 ma. This was not significantly different from those with a longer life span and was not felt to be a factor in the premature failure. An effort was made to prolong pulse generator life by extending the follow-up period until there was evidence of pacemaker malfunction, usually, slowing of the pacing rate. The frequency of the follow-up visits increased as the end expected life of the pacemaker approached through this program was sometimes modified by social factors.

Coronary Sinus Placement

Initial studies suggested that results were unsatisfactory when ventricular pacing was attempted from the coronary venous system. Siddons and Sowton report a rapid rise in threshold requirements for ventricular pacing in patients in whom pacing catheters were inadvertently placed in the inferior coronary vein.³² Because of this, we took special care to avoid coronary sinus placement of the pacing catheter. Since the radiographic appearance, especially in the AP view, may be misleading in this regard, electrocardiographic records were routinely made from the catheter tip after placement.¹¹ When the catheter is in the coronary sinus, recordings made from the catheter tip show a typical positive deflection rather than the negative intracardiac deflection recorded when the catheter tip is within

the cavity of the right ventricle. Although it is sometimes difficult to distinguish radiographically between right ventricular and coronary sinus catheter placement on the AP view alone, this distinction can usually be made on the lateral view which shows the right ventricular catheter far forward of the more posterior position assumed when the catheter is placed in the coronary sinus or coronary vein (Figure 1).

Pacing from the right ventricle activates the right ventricle before the left ventricle and a "left bundle branch block pattern" is recorded on the surface electrocardiogram. The standard electrocardiogram, therefore, has been used to verify catheter position. We have found this method unreliable, however, since in our patients with documented coronary sinus catheter placement, four paced with "left bundle branch block complex," three paced with "right bundle branch block complex," and one paced the atrium. Thus, depending on the position within the coronary sinus or vein, the catheter may pace the right ventricle, the left ventricle or the atrium.

Moss has reported the long term follow-up of 30 patients paced from the coronary vein and he stresses the safety and reliability of this practice.³³ Catheter displacement occurred in only one of his patients and there was no instance of thrombosis or perforation of the coronary vein. Although the initial pacing threshold was somewhat higher than with right ventricular placement (2.0 ma.), no patient developed a late failure to pace due to high threshold.

Our experience has not been so favorable. Of nine patients with coronary sinus pacing, three had troublesome diaphragmatic contractions and catheter reposition was required on three occasions because of unreliable pacing which developed usually within a few days. Although the initial threshold was somewhat higher than in patients with right ventricular placement (1.4 vs 0.7 ma.), no premature pulse generator failure has occurred. In one patient, the threshold measured at the time of pulse generator replacement on two occasions was 2.5 and 2.2 ma., somewhat higher than the average of 1.5 ma. recorded at the time of replacement in patients with right ventricular catheter position. There was no documented or suspected instance of coronary sinus perforation or thrombosis. Three patients have done well with no apparent complications.

SUMMARY

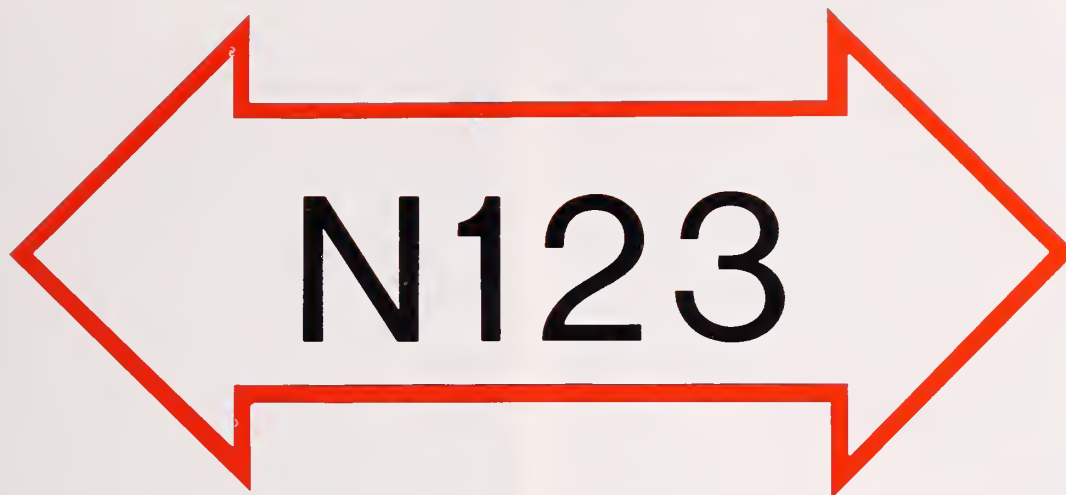
Permanent cardiac pacing is an effective treatment for Adams-Stokes attacks. In our experience with 98 patients, this has proven to be a low risk procedure with an acceptably low incidence of serious complications. Battery depletion requiring pulse generator replacement continues to be the major limitation of this technique. In the evaluation of patients with disturbances of consciousness, a

high index of suspicion often proves rewarding and electrocardiograms recorded during or between attacks may provide a clue to the etiology of their symptoms.

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Clindamycin-Associated Colitis

PHILIP G. HUNTER, M.D., F.A.C.P., F.A.C.G.*

Clindamycin is a relatively new synthetic antibiotic which has been used in the treatment of various infectious diseases, particularly those in which gram-positive organisms prevail. Recently, there have appeared in the literature a number of case reports in which an acute diarrheal state has been associated with clindamycin therapy. In most instances, the patient had been free of gastrointestinal complaints prior to the initiation of clindamycin, diarrhea began during or shortly after completion of the course of therapy, and the diarrhea, although at times severe, was self-limiting once the drug was removed. Characteristic radiographic and sigmoidoscopic findings have been present in most cases. The following case report appears to represent another example of clindamycin-associated colitis.

CASE REPORT

A 58-year-old female was in good health until she developed a productive cough, sore throat, and nasal congestion. She was seen by her family physician who prescribed a one week course of clindamycin 150 mg. four times a day. On the fifth day of therapy, the patient developed the abrupt onset of severe lower abdominal cramps and watery diarrhea. Over the following several days, she experienced ten to twelve loose, mucoid stools per day associated with pain, cramps, and tenesmus. There was no blood observed with the stools. The first two days following the onset of diarrhea a fever of 103-104 degrees orally was noted, but this subsided after 72 hours, and the patient remained afebrile thereafter. The diarrhea and abdominal cramps, however, continued and the patient was admitted to the hospital for further evaluation two weeks following the onset of her acute diarrheal illness. Physical examination revealed a moderately ill appearing patient who was afebrile and demonstrated normal vital signs. The general examination was normal or unremarkable with the exception of a Grade 2/6 systolic ejection murmur at the apex, occasional rhonchi at both lung bases posteriorly, and moderate generalized abdominal tenderness to palpation. The following laboratory tests were found to be normal: CBC, platelet count, urinalysis, glucose, uric acid, cholesterol, calcium, phosphorus, sodium, prothrombin time, and bilirubin. Abnormal laboratory tests included the following: Serum potassium 2.5 meq/lit, CO_2 39 meq/lit, chloride 90 meq/lit, albumin 2.7 grams % and BUN 7 mgms %. Initial alkaline phosphatase and SGOT were slightly elevated and returned to normal during the hospital stay. Several stool cultures were negative for enteric pathogens and no parasites were seen. Chest x-ray, upper gastrointestinal series, and small bowel series were negative. Barium enema revealed inflammatory changes in the mucosa of the cecum, ascending, transverse, descending and sigmoid colon and, to a lesser extent, the rectal segment (Fig. 1, 2). Sigmoidoscopic examination revealed a generalized edematous, erythematous, and non-friable mucosa without ulcerations. Mucous was present and there were raised, small, whitish plaques scattered diffusely over the mucosal surface. A diagnosis of clindamycin-associated colitis was made and the patient treated with a low residue diet and Metamucil.[®] She gradually improved, was discharged from the hospital, and six weeks following the onset of



Fig. 1. Barium examination of the colon revealing irregularity, spiculation, and loss of haustrations of the transverse colon and hepatic flexure.

her illness was asymptomatic with one bowel movement per day. Repeat barium enema eight weeks after the onset of her illness revealed an entirely normal colonic mucosa (Fig. 3).

COMMENT

The onset of acute diarrhea began on the fifth day following initiation of clindamycin therapy. Over the following weeks, the patient experienced severe abdominal cramps associated with multiple watery diarrheal stools. Blood was absent, but mucous was a common observation. Barium enema demonstrated rather marked mucosal changes involving most of the colon with a lesser degree of inflammatory change in the rectal segment. Sigmoidoscopic examination demonstrated an edematous, erythematous, nonfriable mucosa with mucous and raised, small, whitish plaques scattered randomly over the rectal and sigmoid surface. Mucosal biopsies revealed an acute non-specific inflammatory reaction. Crypt abscesses and granulomata were not seen. After the diagnosis of clindamycin-associated colitis was considered, the patient was treated conservatively

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Fig. 2. Post evacuation film of the initial study revealing mucosal destruction and irregularity, small ulcerations, and mucosal edema of the cecum, ascending, transverse, descending and sigmoid colon.

with low residue diet and Metamucil. Corticosteroids and other anti-inflammatory medications were not used. Within five weeks of the onset of her disease the patient was asymptomatic and reported the return of normal bowel movements and an absence of abdominal cramps. A repeat barium enema six weeks after the initial study revealed a normal colon. None of the previously described mucosal changes were present on the follow up examination.

Additional case reports to be found in the literature describe similar historical, radiographic, endoscopic, and pathologic findings. Cohen¹ described three cases considered to represent clindamycin-associated colitis in which all patients had a protracted course of several weeks duration despite cessation of therapy with the drug. Rectal biopsies revealed non-specific inflammatory changes. Barium enemas showed changes consistent with inflammatory bowel disease in one case, but were normal in the others. Proctoscopic findings in all cases revealed whitish, raised plaques on an erythematous mucosa, with or without edema or friability. All patients recovered uneventfully with a return of normal bowel function and a subsidence of the in-



Fig. 3. Barium enema examination eight weeks after the onset of the illness and six weeks following the initial barium study. The entire colon now appears normal.

flammatory changes on proctoscopic examination. Tedesco² reported several cases who demonstrated similar clinical findings including the presence of a pseudomembrane over the inflamed rectal mucosa in each of his patients. Other investigators³⁻⁶ have described a pseudomembranous enterocolitis associated with clindamycin as well as antibiotic therapy other than clindamycin. In all cases, stool cultures did not reveal staphylococcus or other enteric pathogens.

Although it is difficult to be conclusive in the association of clindamycin with the acute diarrheal illness described in this case report, the patient, nonetheless, demonstrated the rather characteristic clinical, historical, and proctoscopic findings described by other observers. It would appear that clindamycin-associated colitis is a true clinical entity and should be considered in any case in which an acute diarrheal condition occurs concomitant with, or shortly after completion of, clindamycin therapy.

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Bilateral Carotid Artery Endarterectomy at One Operation

DAVID M. SENSENIG, M.D.*

Carotid artery endarterectomy has become a commonplace and helpful operation in patients with transient ischemic attacks and an angiographically demonstrated narrowing in the carotid arteries. By and large when both sides are involved, the operations are staged. We have had the opportunity to treat three patients with bilateral disease whose course supports the concept of correcting the bilateral carotid abnormalities at one operation in selected cases.

CASE REPORTS

Case 1. A 64-year-old man reported dizzy spells for one week prior to admission to Eastern Maine Medical Center, associated with faintness. He was left handed. He had a slight stroke one year previously at which time the left side of his face was weak. The patient was a heavy user of alcohol.

On examination, there were bilateral carotid bruits but the one on the left was louder. After fifteen seconds of carotid pressure on either side, the patient's sensorium became cloudy and he had difficulty speaking. There was rapid clearing when carotid pressure was discontinued. His blood pressure was 130/80.

A chest x-ray was consistent with diffuse pulmonary emphysema and fibrosis. A cerebral four vessel angiogram showed bilateral narrowing of the internal carotid vessels over a segment of 2 cm. with slightly greater post-stenotic dilatation on the right. The right vertebral artery was larger than the left.

Because of the high grade obstruction, operation on the left carotid artery was performed May 7, 1971 under hypothermia using an internal shunt. Initially the patient did very well with no sign of stroke. About 8 a.m. on May 8, 1971 the patient developed a stroke-like picture involving the left arm and leg. These symptoms cleared in the space of an hour. The picture recurred about 2 p.m. that day. Re-operation was performed. Since lateralization is not always accurate, the operative site on the left was explored first. An excellent pulse was found in the internal carotid. The right side was then explored. There was no back flow from the brain at first when the common and internal carotid arteries were opened. A shunt was placed anyway and carotid artery endarterectomy performed. After the shunt was removed, there was an extrusion of clot and then a good backflow. After the arterial incision was closed, there was a strong pulse in the right internal carotid artery. Postoperatively he was responsive and moved his previously paralyzed left arm and leg. On May 10, he became semicomatose and had a blood pressure of 210/120. Cerebral edema was thought to be present. The intravenous injection of Lasix* helped. By May 18, 1971, he was up walking. Postoperatively he had a persistent left homonymous hemianopsia. He was anxious to go home on May 30 and was discharged the next day.

He was re-admitted June 5, 1971 with headache, some somnolence and dysarthria. An angiogram showed normal appearing internal carotid arteries bilaterally plus an atheromatous plaque in the proximal anterior cerebral artery and proximal posterior cerebral artery bilaterally. He showed improvement and was transferred to an extended care facility. After further improvement, he was discharged to continue his usual activities which he is doing to this day.

Case 2. A 78-year-old female had episodes of blurred vision and ataxia which led to her admission to Eastern Maine Medical Center. A four vessel cerebral angiogram was advised but refused. After returning home from the hospital, the patient experienced another episode of ataxia and prolonged blurring of vision which prompted her return for further therapy.

Her blood pressure was 200/100. There was arteriovenous nicking bilaterally on funduscopic examination. A bruit was audible over the left carotid artery. An arteriogram showed severe narrowing of the internal carotid arteries bilaterally.

Bilateral internal carotid artery endarterectomy was performed at one operation on September 20, 1971. There was some slight postoperative right sided weakness and some right facial weakness which cleared rapidly. Her postoperative blood pressure was 160/80. She has done well subsequently and is in excellent condition at this writing.

Case 3. A 58-year-old man was re-admitted to Eastern Maine Medical Center for re-evaluation of epigastric pain, nausea, regurgitation and hiccoughs. A recurrent hernia of the diaphragm had been conclusively demonstrated. He had undergone a previous repair of hiatus hernia of the diaphragm, vagotomy and posterior gastrojejunostomy elsewhere. He had developed weakness of the left arm and leg. The weakness of the left leg increased prior to this hospital admission. He fell at home three nights prior to entering the hospital.

On examination, the patient was short of breath, hiccoughing and belching with aerophagia. There was tenderness to palpation over the anterolateral chest wall. Sensory examination was intact, but there was hyperreflexia of the left arm and leg.

An electroencephalogram showed minimal mild dysrhythmia. An upper gastrointestinal series of x-rays demonstrated residual hiatal hernia with ulceration at the gastro-esophageal junction with reverse peristalsis and a patulous distal esophagus. A brain scan was normal. An aortic arch study with bilateral carotid angiography showed 90% occlusion of the left carotid artery at the bifurcation and marked narrowing on the right side. Following the arteriogram, the patient developed a right and left hemiplegia. Bilateral carotid artery endarterectomies with venous patch graft angioplasties were done on May 11, 1973. Postoperatively the patient talked and moved all extremities. At times he was confused. On May 31, he developed severe upper gastrointestinal bleeding. On June 1, he underwent repair of hernia of the diaphragm with a Nissen fundoplication, gastrostomy and tracheostomy. The patient was in a poor nutritional state. He required resuture of the lower portion of the laparotomy wound on June 13. He continued to have esophageal regurgitation and developed gastric bleeding on July 17. On July 31, esophagogastrosctomy showed two esophageal strictures in the mid-and distal esophagus with much less esophagitis but there was a diffuse hemorrhagic gastritis. He was placed on milk and a bland diet. He gradually improved enough to be transferred to a nursing home on August 27, 1973. On October 28, he had a cerebrovascular accident in the nursing home and died the next day.

DISCUSSION

When bilateral internal carotid artery stenosis is present, the accepted procedure is to operate on the more severe side first and to do the second side later, perhaps in a week. Such staging avoids too

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much neck swelling from bilateral procedures at one operation and also avoids bilateral injury to the hypoglossal nerves with swallowing of the tongue. In addition, it may result in less cerebral edema than might occur after a bilateral procedure at one operation.

Analysis of our cases presented above raises the question whether or not such staging is always wise. In Case 1, a stroke developed postoperatively because of occlusion on the non-operated side. This is not surprising since elective carotid artery surgery has been recommended prior to doing major surgery of another sort in patients with internal carotid artery stenosis even though they may be asymptomatic.¹ It has been stated that blood pressure changes resulting from surgery may lead to thrombosis. It seems to us that a similar argument can be advanced for doing bilateral procedures at one operation when there is severe bilateral stenosis. Such a procedure in Case 2 was followed by a good result. In Case 3, there was a bilateral severe deficit and bilateral severe stenosis. It was a desperate situation, but cleaning out both sides at one operation achieved a good neurological result.

SUMMARY

We would agree that staged carotid artery endarterectomies can usually be done with success. Such staging avoids bilateral neck swelling, avoids the possibility of bilateral hypoglossal nerve injury and may limit cerebral edema. We have presented cases to show that at times bilateral procedures at one operation can be rewarding. In Case 1, failure to do both sides at one operation resulted in a stroke. Bilateral procedures in Cases 2 and 3 were successful.

CONCLUSION

When bilateral severe internal carotid artery stenosis exists, serious consideration should be given to bilateral procedures at one operation to avoid stroke from thrombosis on the non-operated side in the immediate postoperative period.

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CLINDAMYCIN-ASSOCIATED COLITIS — *Continued from Page 303*

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Heineke-Mikulicz Repair of the Colorectal Anastomotic Stricture

A New Application of an Old Concept to Solve a Difficult Problem

P. MAYNARD BEACH, JR., M.D.,* JOHN H. LYONS, JR., M.D.** and
DON L. MAUNZ, M.D.

Mild degrees of narrowing at colorectal anastomoses are not uncommon, but they are generally asymptomatic and require no treatment. In contrast, marked stricture formation following a low anterior resection is an unusual and serious affliction, and efforts to relieve the obstruction with dilations from below are generally misdirected and futile. The case cited in this communication illustrates some of the problems associated with the management of this complication, and describes a simple method for definitive repair.

CASE REPORT

A 50-year-old man (177580) was admitted to the hospital in February of 1962 with a history of recent bowel habit change and intermittent rectal bleeding. Sigmoidoscopy demonstrated the presence of an annular carcinoma 16 cm. from the anal verge. At operation, the lower extent of the tumor was 6 cm. proximal to the peritoneal reflection. The serosa was grossly involved with neoplasm, but there was no indication of further local spread or of intraperitoneal metastases. A low anterior resection was done and a double layer end-to-end colorectal anastomosis was carried out without difficulty.

Nine months following hospital discharge the patient began noting constipation, and sigmoidoscopy documented some narrowing at the anastomotic site. Complaints of obstipation persisted and repeat sigmoidoscopy two and one-half years later demonstrated significant narrowing where the bowel had been rejoined. A biopsy revealed no evidence of recurrent tumor. Dilatations were carried out at interval periods during the next three years without subjective or objective improvement. A barium enema in December of 1966 (Fig. 1) demonstrated marked narrowing at the colorectal anastomosis but the patient declined further surgery. Finally, in October of 1967, over five and one-half years following the bowel resection, the stricture became disabling, and the patient developed an inguinal hernia.

Elective revision of the strictured anastomosis was then undertaken. The obstructing "diaphragm" of scar tissue was resected, and an adequate bowel lumen was fashioned by employing the Heineke-Mikulicz principle of longitudinal incision and transverse closure. There was no tumor recurrence. A temporary diversion colostomy was subsequently closed within six weeks.

Seven years have elapsed since repair of the stricture and the patient remains completely symptom free. A barium enema five years following corrective surgery (Fig. 2) documents wide patency at the area of revision.



Fig. 1. Barium enema in December 1966 demonstrating a localized stricture at the level of the colorectal anastomosis.

DISCUSSION

Benign strictures of this sort are usually sequels to early anastomotic leaks with subsequent inflammation and scarring. Tension not only predisposes to disruption, but in addition, may serve as a provocative stimulus to proliferative overgrowth. Adequate blood supply and technical excellence are as always, mandatory prerequisites for success in any bowel anastomosis.

Operative repair of this lesion is a challenging undertaking. Appreciation of this reality is doubt-

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Fig. 2. Barium enema five years following revision of the stricture. The bowel at the site of the operative repair is now widely patent.

less responsible for the prevailing concept that all efforts should be made to deal with the problem conservatively. Injudicious dilatations are not without hazard however, and they may foster further scarring and increased narrowing.

At the primary operation, maximal rectal mobilization has usually been obtained to assure an adequate margin below a low lying malignancy. Frequently the suture line is below the peritoneal reflection. Accordingly, excision of the strictured segment and re-anastomosis in the hollow of the sacrum is a demanding technical exercise at best, and sometimes is simply not feasible. The trans-sacral approach to the rectum is possible, but extensive mobilization of the rectum may be required to perform a re-anastomosis, and blood supply may be jeopardized. In the absence of recurrent tumor, one would prefer to avoid more radical operative possibilities such as abdominal perineal resection.

Although the Heineke-Mikulicz principle has been applied in dealing with narrowed areas elsewhere in the gastrointestinal tract, it has not to our knowledge, generally been considered when dealing with the low colorectal anastomotic stricture. One need only to expose the anterior circumference

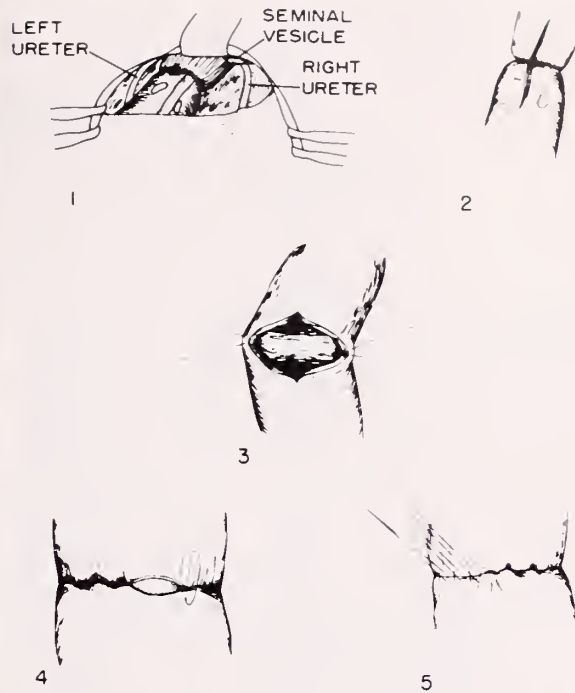


Fig. 3. Stages in the repair of a low lying stricture utilizing the Heineke-Mikulicz principle. Anterior view of the stricture (3-1). Longitudinal incision made anteriorly through the strictured area (3-2). Lateral traction sutures ease closure of the bowel in a transverse fashion (3-3). Placement of the inner layer of absorbable interrupted inverting sutures (3-4). Final layer of closure completed with interrupted non-absorbable sutures (3-5).

of the bowel at the area of narrowing, (Fig. 3), thereby avoiding the technical hazards attendant with complete transection and re-anastomosis at this level. Blood supply remains unmolested. A linear incision is made in the bowel 3 cm. proximal to and 1 cm. beyond the stricture. Obstructive scar tissue is resected from within the lumen of the open bowel. Lateral traction on sutures placed at the level of stricturing facilitates transverse closure. Any mobilization required to relieve tension may easily be obtained by further freeing of the upper sigmoid segment. A double layer closure is recommended, the inner layer being interrupted absorbable sutures, while the outer layer is of fine interrupted non-absorbable material. A temporary diverting colostomy is advised which may be closed within four to six weeks following documentation of anastomotic patency by barium enema.

SUMMARY

The low colorectal anastomotic stricture is a troublesome management problem which taxes the ingenuity of the surgeon. The Heineke-Mikulicz principle of longitudinal incision and transverse closure is a simple and appealing approach to the problem in the absence of recurrent tumor, and when the narrowing is of a short segmental nature. Extensive dissection is avoided and blood supply is left essentially unaltered. A case successfully treated using this method is described, and the technique illustrated.

Serum Human Placental Lactogen (HPL) in Pregnancy Assessment (Selected Case Illustrations)

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Prenatal evaluation of the obstetric patient is done periodically to allow early recognition of conditions associated with the development of an intrauterine environment hostile to the fetus. The measurement of maternal weight and blood pressure, the testing of urine for protein, and monitoring of the fetal heart have long been used for the purpose of ascertaining maternal as well as fetal well-being. During the past decade, laboratory tests and clinical procedures have been developed which give additional information on the status of the fetus. Urinary estriol, amniocentesis, ultrasound scanning, and intrapartum fetal monitoring are now in general use.¹⁴ Recently, a new test has become available to study placental function.^{2,3,4,9,10} This procedure relies upon measurement in the maternal serum of a placental hormone which is secreted by the syncytiotrophoblast into the maternal circulation.^{1,12} Analysis of this hormone, known as Human Placental Lactogen (HPL) or Human Chorionic Somatomammotropin (HCS), can serve as a basis for evaluating placental status. HPL has the following characteristics:^{12,13}

- A — Present in large and increasing quantities in maternal blood from the sixth week of gestation and peaking at the 38-39th week.
- B — Easily and reliably quantitated.
- C — Has no known diurnal variation, and a half life of 20 minutes, allowing for serial studies over a short period of time.

This presentation will show how HPL levels were helpful in detecting placental dysfunction in selected cases.

Materials: Blood was drawn from the mother in the out-patient laboratory or in the physician's office. The serum was separated and stored at 4°C until the assay was performed which was generally within 24 hours. Amniocentesis was performed by the attending obstetrician and the amniotic fluid was delivered immediately to the laboratory for L/S, shake test, and creatinine determinations.

Methods: Lecithin/Sphingomyelin (L/S ratio or Gluck Test) for the prediction of pulmonary maturity¹⁵ was determined by use of the Helena system.

The Shake (or rapid surfactant) test by Clements was used also.¹¹ Creatinine, another indicator of fetal maturity,¹⁶ was determined by the Standard Alkaline Picrate Method. HPL was assayed by the Amersham Searle test kit. A control serum and standards were included with each group of unknowns. The placenta weights, as well as the size and description of lesions were noted. In selected cases, photographs and, in most cases, microscopic examination was undertaken.

CASE HISTORIES

Case #1 — 26-year-old G 3, P 1, AB 1. This woman was in apparent good health with a history of an uncomplicated gestation and delivery of a 7 lb. 4 oz. infant in 1972. The latest pregnancy was characterized by uncertainty of the gestational dates. The LMP was thought to be 11-22-73 with an estimated date of confinement of 8-29-74. Prenatal visits revealed a small uterus for dates of gestation. Weight gain of 21 pounds was recorded. Blood pressure increased slightly from 110/60 to 130/80. Human Placental Lactogen was obtained on 9-19-74 and revealed a value of 3.5 micrograms per ml. (in the fetal danger zone). Amniocentesis on 9-21-74 revealed a L/S of 1.9, creatinine of 2.0 mg.%. Suggested delivery was refused by patient and husband; however, labor began on 22 September. Amniotomy was performed. External monitoring with bradycardia after contractions was noted during the labor. A low forceps delivery under paracervical block was performed producing a 6 lb. 5 oz. male infant in satisfactory condition. The placenta was partially adherent to the uterine wall and was noted to be circumvallate and had a velamentous insertion of the umbilical cord.

Case #2 — 18-year-old G 1 presented in good general health to the prenatal clinic. LMP was 10-22-73 with an estimated date of confinement of 7-29-74. Weight gain throughout the pregnancy was 25 pounds. Blood pressure increased from 118/60 to 138/86. Beginning with the visit 7-16-74, the fundal height did not keep pace with the weeks of gestation and a tentative diagnosis of intrauterine growth retardation was made. On 8-6-74, HPL level of 3.0 micrograms per ml. (in the fetal danger zone) was obtained. On 8-7-74, amniocentesis was performed and green meconium containing amniotic fluid was obtained. I.V. Pitocin * induction was undertaken and the 5 lb. 1 oz. male infant in good condition without respiratory distress was delivered on the same day. The placenta measures 420 grams and showed a large area of infarction of approximately 50% of the total volume of the placenta.

Case #3 — A woman with a known horseshoe kidney on the right side became pregnant. The attending physician was concerned about the one functioning kidney and followed the patient closely. It was noted during the pregnancy that the patient developed toxemia manifested by hypertension and edema, and intense study of the pregnancy was undertaken. During this clinical evaluation, an HPL level was obtained and was noted to be 1 micrograms per ml. which is a low value, clearly in the fetal

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danger zone. The HPL was repeated the following week and the same result was obtained. Caesarean section was undertaken two days later and a 920 gram male infant was delivered. The infant did well and developed no respiratory distress. The placenta was markedly abnormal weighing 220 grams and showed multiple placental infarcts and extensive fibrin deposition.

Cases #4, 5, 6, and 7 are presented to illustrate the values of normal Humal Placental Lactogen levels in varying conditions during pregnancy.

Case #4 — Mild toxemia of pregnancy manifested by blood pressure increase, trace protein in urine and edema. HPL level on 8-7-74 was 10.1 mg./ml., normal level. Amniocentesis revealed a L/S ratio of 1.1 to 1. Shake test was negative; creatinine of 2.1 mg.%. This data indicated pulmonary immaturity in an infant that probably had an intrauterine weight of 2500 grams or more. Thus, delivery based solely on estimation of gestation and on weight would have produced an infant with a high probability of developing neonatal respiratory distress. However, repeat amniocentesis 10 days later revealed L/S 2.8 to 1. Shake test was negative and creatinine of 2.5 mg.%. Delivery was undertaken and a 6 lb. 14 oz. female infant was born. The neonatal period revealed no respiratory distress. No placental abnormalities were noted.

Case #5 — Question of delivery dates. HPL of 10.1, normal, on 8-7-74. Amniocentesis also revealed a L/S ratio of 2.6 to 1. Shake test was positive and creatinine of 3.0 mg. %. A full term female infant was delivered weighing 7 lb. 14 oz. Apgar 7 at 1 minute; 10 at 4 minutes. No placental abnormalities were noted.

Case #6 — Normal pregnancy. HPL on 8-6-74 was 6.8, normal range. Amniocentesis on 8-6-74 L/S 8 to 1. Shake test was positive and creatinine 2.5 mg.%. A full term infant weighing 9 lb. 1 oz. was delivered. Apgar 10. The placenta weight was 720 grams, showing no abnormalities.

Case #7 — Normal pregnancy. HPL 9.2 mg./ml., normal range. Amniocentesis revealed L/S ratio of 2 to 1. Shake test was positive and creatinine 2.1 mg.%. A full term male infant was delivered weighing 8 lb. 12 oz. The placenta weight was 880 grams with a few gross infarcts. No other abnormalities were noted.

DISCUSSION

The developing fetus is dependent upon a properly functioning placenta. Early warning that placental function is not keeping pace with fetal requirements would help in the detection of pregnancies that require a more intense level of care during the prenatal, intra- and postpartum periods.¹³

Josimovich showed that Human Placental Lactogen secretion levels were related to placental weight in uncomplicated pregnancies.⁵ Later, Letchworth, in the study of normal pregnancies, concluded that serial Human Placental Lactogen levels were helpful in detecting women whose infants are at higher risk for developing neonatal asphyxia. He noted an increasing risk with successive low levels of Human Placental Lactogen.⁶

Spellacy, in a study of a large number of pregnancies complicated by hypertension, observed that a Human Placental Lactogen level after the thirtieth week of gestation of less than 4 micrograms per ml. was a strong indication that the fetus was in immi-

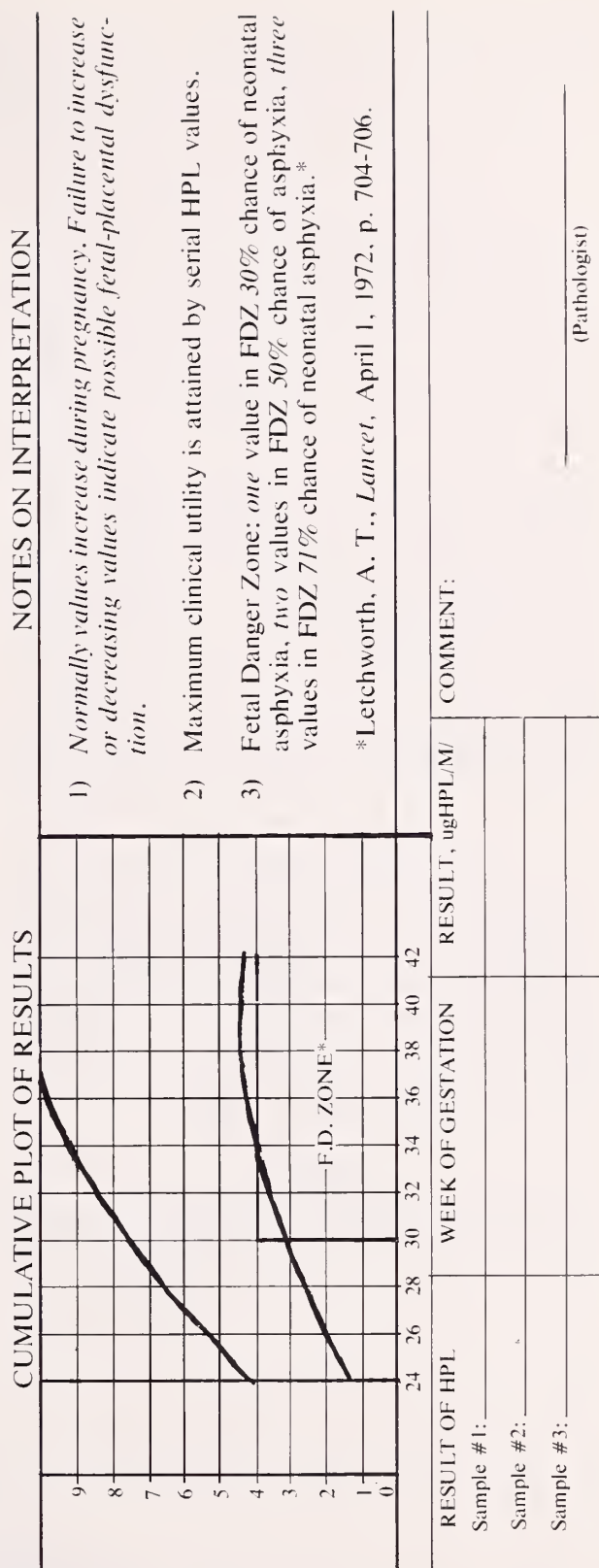


Fig. 1 — HPL report form utilized at Eastern Maine Medical Center stressing range of values found with various gestational ages. Fetal Danger Zone outlined. Results are plotted on the graph and notes on interpretation supplied.

nent danger.^{7,8} These studies clearly showed that HPL levels were predictive in detecting impaired placental function. From these studies, the concept of a fetal danger zone evolved (Fig. 1). This zone is defined as a level of Human Placental Lactogen of 4 micrograms per ml. or less after the thirtieth week of gestation.^{7,8,14} Thus, any value in this area should stimulate concern that placental function is not keeping pace with the fetal requirements. Other data, such as amniocentesis, may then be indicated for dating of the fetus and for defining pulmonary maturity. The Human Placental Lactogen has also been a useful study in cases where delivery date discrepancy or post maturity syndromes are being ruled out. There has been a positive correlation of low levels of Human Placental Lactogen noted in the presence of the post mature syndrome. Hobbins and Kase have recently reported a 93% correlation between low HPL levels and the post maturity syndrome.¹⁰ The evidence currently available, therefore, supports the use of Human Placental Lactogen levels for the screening of pregnancies that are considered normal, and even more strongly those with conditions such as hypertension, preeclampsia or the post-mature syndrome in order to detect impaired placental function. The course to be followed after the Human Placental Lactogen level has been established depends on the particular circumstances. In the cases presented here the patients were further evaluated by amniocentesis. This allows for estimation of gestational age with the use of creatinine and uric acid levels, and prediction of the state of fetal pulmonary maturity through the use of L/S ratio and the bubble stability test. In the cases presented, those with low levels of Human Placental Lactogen all revealed significant placental abnormalities. In those instances where the Human Placental Lactogen levels were in the normal range, the placentas were normal at delivery.

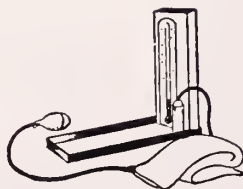
SUMMARY

The serum Human Placental Lactogen provides a measure of functioning placental mass. The normal value ranges have been determined for different

gestational ages. Associated conditions of hypertension, possible post-dating, the small for date discrepancy syndrome and normal pregnancies can be investigated with this test. Values of less than 4 mg./ml. after the thirtieth week of gestation are associated with placental dysfunction.

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The Hospital Chaplain — A Member of the Emergency Department Team*

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INTRODUCTION

By its very nature, emergency medicine centers on crisis intervention. Emphasis correctly is laid upon restoration and maintenance of life-sustaining physiological functions. The importance of this is self-evident. However, there are aspects of the crisis which extend beyond the immediate physical problems.

As coordinator of the Emergency Department team, the physician expends his energies on supporting life. He is comfortable with this. Similarly, because his training has emphasized the physical aspects of disease, the physician sometimes feels less at ease dealing with the anxieties of the patient, the family, and even the frustrations of his own staff. While he may be acutely aware of these non-physical entities, he may relegate them to a priority less than they deserve.

It is important that the crisis be considered in its entirety. By dealing with all the components, including the emotional and spiritual, many future problems can be averted.

The trained hospital chaplain, as a member of the Emergency Department team, can contribute substantial assistance in achieving this goal of dealing with the whole crisis. It should be emphasized that he is not a service of last resort to be called in when all else fails. His role is one of being an integral member of the Emergency Department team. In this manner, he can aid in promoting comprehensive crisis care.

THE CHAPLAIN AND THE FAMILY

While the Emergency Department staff tries to maintain life, the chaplain can work in a supportive way with the family. Waiting and not knowing the outcome of a loved one in the midst of a life-threatening crisis can be almost as traumatic to the family as to the patient. They surmise that their relative's condition is serious. They often observe and misinterpret staff activity unfamiliar to them. Considerable time may pass while they remain uninformed as to the status of their family member. All of this has its price. The family often is in shock. As one anxious husband said, "Is this really happening or

is it a bad dream?" If it becomes necessary for the physician to inform the family of their relative's worsened condition or death, additional trauma is added. This may make it difficult for the physician to discuss other important matters with them. Amid all the stress, excitement, and confusion, the chaplain can bring a calming presence to the distraught family.

During a long period of uncertainty, the family often needs an opportunity to vent their feelings. The chaplain can help them accomplish this. Religious questions and guilt feelings often arise and need recognition. "What have I done that would cause God to treat me this way?" is a remark frequently heard. At times, the family may find further relief in prayer.

Frequently the chaplain can be a mediator between team members and the family, e.g., by relaying information about the patient that may have been previously obscured.

THE CHAPLAIN AND THE PATIENT

Initially, the critical areas are the physical needs of the patient and the emotional needs of the family. However, the patient may also have needs extending beyond the physical. The unfamiliarity with the procedures and the strangeness of the surroundings and equipment are often overwhelming. The patient often reacts with a frantic and honest concern, "Am I going to make it?" As a team member, the chaplain can lend comfort. This unannounced recognition that God has not forgotten him can alleviate greatly some of the patient's anxieties. He can also assure the patient that matters left unattended will be given his concern.

The chaplain can sit down with the patient, letting him know that he is not alone, and give him an opportunity to express whatever is on his mind. This often facilitates the release of anxiety, guilt and other feelings. The patient may unload many things which have not surfaced in months or years, but may have in some way contributed to the crisis at hand. Important details relating to both the immediate crisis and the follow-up period may come to light.

The patient sometimes would like to draw on other resources such as prayer. He may wish to discuss the religious significance of the recent events. It is not unusual for the patient to turn to the chaplain and ask, "Has God left me?" At such a

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time, the chaplain can provide reassurance.

By becoming acquainted with the patient as he enters the Emergency Department at his time of crisis, the chaplain can continue this relationship through the recovery. In this manner, a valuable sense of continuity can be commenced.

THE CHAPLAIN AND THE STAFF

By virtue of being a member of the Emergency Department team, the chaplain can also interact with the staff itself. Tensions often rise, pressures mount and tempers become short in even "routine" emergencies. Faculty equipment and the inefficiency and shortage of materials can cause the most stable person to become frustrated and discouraged. These feelings have a way of remaining locked up within the individual.

Identification with the patient is often inevitable especially when the emergency involves a young adult or a child. Comments such as, "That could have been me" or, "My child is the same age" are often heard.

Similarly, where medicine is oriented towards life as success, apparent failure can lead to personal guilt and deterioration of morale.

In these situations, the chaplain can serve as a sounding board for frustrations. He can help in sorting out the feelings of identification and boost

morale by his objectivity. By dealing with his teammates' "crisis" directly, many a family dinner can be more digestible. And, the next crisis can be met with greater confidence.

Sometimes out of the crisis come questions of a religious, moral or ethical nature. The chaplain is well suited to discuss these with his associates. In any case, problems related to the crisis can be dealt within group sessions or on an individual basis. His familiarity with the nature of emergency work makes him an informed and understanding colleague.

SUMMARY

There are many ramifications of crises seen in the Emergency Department. All of them are important. Indeed, each should be given its fair consideration as it occurs. While the medical staff is actively engaged in supporting life, the trained hospital chaplain can assist in dealing with the less physical aspects of the crisis. He can give support to the distressed family. He can provide reassurance to the patient. He can lend sympathetic understanding to the staff. His membership on the Emergency Department team contributes toward a comprehensive handling of the whole situation. The benefits of his participation can be substantial in both the immediate and the long-range results of the crisis.

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Cisternography With Chelated Ytterbium 169

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Studying cerebral spinal fluid kinetics has assumed an important role in recent years. Clinical syndromes have been related to abnormality in cerebral spinal fluid dynamics particularly in the adult age group. One of these syndromes, normal pressure hydrocephalus, characterized by dementia and gait dyspraxia can be substantially reversed or retarded by ventriculo-atrial or ventriculo-peritoneal shunting. Cisternography is performed to help identify these patients and others with abnormalities of cerebral spinal fluid kinetics.

Historically, the first studies done to evaluate cerebral spinal fluid dynamics were carried out with visible dye. These dyes were used to evaluate the effects of coughing, sneezing, and straining on the cerebral spinal fluid flow pattern. It was felt that arterial pulsation influenced choroid plexus motion and this phenomenon was evaluated in animals.¹ Initially, investigators felt that cerebral spinal fluid was formed and resorbed equally within the ventricles and the subarachnoid space. Later it was found that production and resorption vary in different areas. It is now known that the production of cerebral spinal fluid occurs in the choroid plexi with the resorption of cerebral spinal fluid occurring through the arachnoid granulations over the cerebral hemispheres. This formulation is often referred to as the Key and Retzius-Weed theory.¹

The earliest radioactive agent used in the investigation of the CSF flow pattern was colloidal gold Au 198 and a consistent pattern of distribution in animals and some patients was found. Rose bengal sodium I 131 was also employed and similar flow patterns were observed. I 131 human serum albumen and indium 111-DTPA were the first agents used regularly on a clinical basis. Since 1964, the mapping of cerebral spinal fluid flow has become a useful clinical tool in diagnosing CSF rhinorrhea and otorrhea, leptomeningeal cysts, subarachnoid blocks secondary to arachnoiditis or hemorrhage, normal pressure or occult hydrocephalus, obstructive hydrocephalus, intraventricular tumor, porencephaly, spontaneous ventriculostomy, and the function of neurosurgical shunts.⁶

The administered dose of I 131 human serum albumin is usually in the range of 100 microcuries but this does not provide enough photons for high quality imaging. The use of potentially toxic albumin is also a disadvantage whether used with I 131 or 99m

FIGURE 1

CONSENT FOR CISTERNOGRAPHY:

I have been informed that Ytterbium 169 is an investigational drug and told that the isotope will be injected into the spinal canal. The purpose is to find out if the flow and absorption of spinal fluid follows a normal pattern. I know that there are few toxic effects, but that all effects of a long term and short term kind are not known at present. I give my permission to have this test called a cisternogram done on myself.

Signed:

witness:

technetium which has also been used successfully. Technetium, although it provides better photon yield, has a short half life of six hours and even when united with less potentially toxic inulin this disadvantage still exists. As a result, Ytterbium 169 chelated with diethylene-triaminepentaacetic acid (DTPA) was introduced by Wagner et al at Johns Hopkins in 1969, after having been found useful in brain scanning and renal studies.⁶ In addition to a suitable radioactive half life of 32 days it has a high photon yield, a gamma photon emission which is in the proper range for photon detectors in current use (177 and 198 kev) and a very stable bond with the DTPA.² A primary advantage of the DTPA-Yb 169 chelate is that it is removed from the body by the kidneys as a glomerular substance once it leaves the subarachnoid space by vascular absorption.³ Toxicity of the chelated complex has not been demonstrated in humans or animals where doses as high as a thousand times the concentration used in humans have been injected.⁶

METHOD

After the consent for cisternography is signed (Figure 1) and a BUN or IVP indicates normal renal function, the patient is kept in a fasting state. An intrathecal injection of 0.5 millicuries to 2.0 millicuries of Yb 169 DTPA is carried out in the Nuclear Medicine Department. Confirmation of the intrathecal location of the material is immediately sought, using the gamma camera. To date no extra-arachnoid placement of the material has occurred in our patients. Serial rectilinear or gamma camera studies are then carried out at 2 to 3 hours, 6 to 7 hours, and 24 to 48 hours. Some patients have required 72 and 96-hour followup studies and as the examination is monitored the length of the procedure is decided. Reports in the literature describe satisfactory examinations as long as 120 and 144 hours after injection⁶ but we have not found it necessary to monitor for any longer than 96 hours. None of the patients who were studied had pneumoencephalography within the previous week and to

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reduce the likelihood of extravasation an interspace not recently used for lumbar puncture was chosen. Once the material reached the head routine lateral and PA views were obtained at each observation.

The normal study usually allows detection of radioactivity within the cervical subarachnoid space, cisterna magna, and most of the basal cisterns in two to three hours. In six to seven hours the material has passed through the tentorial incisura and can be observed symmetrically distributed in the Sylvian fissures, and often over the lateral surfaces of the cerebral hemispheres. The material is also in the midline subarachnoid spaces, in the cisterns in front of the brain stem, and also in the suprasellar, subfrontal, and interhemispheric areas by this time. At 24 hours the labelled material has collected over the cerebral convexities and the parasagittal areas. In the normal patient, penetration into the ventricular system is not recognized.¹ In patients with normal pressure hydrocephalus, there is early ventricular penetration of the radioactive material frequently at 6 hours and increased radioactivity frequently persists in the lateral ventricles at 24 to 48 hours. In patients with primary cerebral atrophy, the images are quite similar to a normal cisternogram but there is a marked delay in movement and it may be 48 to 72 hours before the activity becomes concentrated over the hemispheres and in the parasagittal region.² Cerebral spinal fluid leakage can be recognized by a characteristic pattern on a scan or by abnormal radioactivity in cotton pledgets in the nose or ears. In patients with obstruction to flow in the spinal axis, radioactive material never reaches the basal cisterns.²

DOSIMETRY

Because of the 32-day half life of Ytterbium 169 and the biological half life of approximately 11 hours in a normal patient, dose to the central nervous system, kidneys and total body is quite low. In patients with obstruction of the subarachnoid space or normal pressure hydrocephalus, there is not much of an increase as absorption through the arachnoid membranes of the spinal cord occurs as well as in those surrounding the brain. In addition, the dose to central nervous system gray and white matter is limited to the more penetrating gamma radiations because the radioresistant pia mater and supportive tissue absorb the low energy non-penetrating beta radiation emitted by the Ytterbium 169.⁴

Excretion has been quantitated and these studies show a fast component of about 11 hours that accounts for 96 to 98% of the activity in patients who demonstrate normal cerebral spinal fluid flow and in those with atrophy. This lengthens to about 30 hours in patients with normal pressure hydrocephalus. In all patients, the half time of the slow component, accounting for 2 to 4% of the total dose, is approximately 30 days, or the radioactive half life of Ytter-

TABLE 1
RADIATION DOSIMETRY TO VARIOUS ORGANS FOLLOWING
INTRASPINAL ADMINISTRATION OF Yb-169 DTPA FOR
CISTERNOGRAPHY STUDIES

Organ	Absorbed Dose (RADS/mCi)
Spinal Cord	
Neuronal Cells*	3.1
Pia Surface	25.4
Brain (White and Grey Matter)*	
Normal or Cerebral Atrophy	3.2
Hydrocephalus (50-100 ml ventricles)	6.2 - 6.5
Total Body**	0.1 - 0.5
Kidney**	0.1 - 0.5
Liver**	0.1 - 0.9
Bladder**	0.8 - 1.8
Gonad**	
Testicle . . . . .	.04- .66
Ovary . . . . .	.05- .80

*Dosimetry primarily from penetrating radiations due to absorption of non-penetrating radiations by pia and supportive tissue.

**Range is for normal renal function ($T_{1/2} = 1.5$ hr) and impaired renal function ($T_{1/2} = 24$ hr) which affect blood half-times.

TABLE 2

Findings	Number	Interpretation
Normal flow	9	Normal study
Ventricular penetration	9	Normal pressure hydrocephalus
Slowed flow	4	Slowed flow
CSF leakage	1 patient (2 studies)	CSF rhinorrhea

bium 169. Maximum activity in the head is attained 10 to 24 hours after intraspinal administration and ranges from 16 to 53% of the dose in all patients. All long-term activity is within the head and none is recognizable in the spine. Based on animal studies, long-term brain retention of less than 5% is not an unreasonable assumption.⁴

Beta radiation (electrons) from Ytterbium 169 is at very low energy levels and contributes very little to the overall dosage, falling to 10% of the surface dose at 100 microns depth. Since the major consideration is gamma radiation, this greatly reduces the dosimetry values for the 2 to 4% of administered Ytterbium 169 which is retained mainly in the cranium as detailed above. In addition, membranes such as the radioresistant pia mater have been shown to tolerate radiation up to 1000 rads with no permanent damage (Table 1).⁴

All of our patients received 0.5 to 1.0 millicuries of Ytterbium 169 with one exception, a patient who was being investigated for cerebral spinal fluid rhinorrhea and received 2.0 millicuries of Ytterbium 169 DTPA when he was studied for the second time. This was necessary to make the diagnosis, as described below.

FIGURE 2
A. NORMAL STUDY AT TWO HOURS



B. NORMAL STUDY AT SIX HOURS



C. NORMAL STUDY AT 24 HOURS



FIGURE 3
NORMAL PRESSURE HYDROCEPHALUS
WITH VENTRICULAR PENETRATION AT 6 HOURS



RESULTS

Twenty-three patients have been studied in our Nuclear Medicine Section up to this time. All but one were evaluated to help in differentiating normal pressure hydrocephalus from cerebral atrophy. One patient was studied twice to determine the presence of CSF rhinorrhea, for a total of 24 cisternograms. Pneumoencephalography was carried out in eighteen of the twenty-three patients. Ventricular dilatation without thinning of the cortical mantle or convexity air was found in ten of the cases. Eight cases showed ventricular dilatation with air over the convexities.

Figure 2 is an example of a normal radioisotope study and demonstrates the progressive collection of radioactive material over the convexities and in the parasagittal region at 2 and 6 hours. Sequential filling and emptying of the cisterns and subarachnoid space over the convexity of the brain is evident over 24 hours. In patients with cerebral atrophy, the time required to demonstrate a similar pattern is prolonged to 48 or 72 hours. Figure 3 demonstrates abnormal ventricular filling with the radioactive material which can be seen as soon as six hours after injection. These findings are strongly indicative of normal pressure hydrocephalus and it is this group in whom cerebral spinal fluid shunting may provide relief. Satisfactory clinical criteria must be met as well.

A CSF leak was demonstrated in one patient after an earlier study using 0.5 millicuries of Ytterbium 169 did not reveal a leak or an abnormal flow pattern. The second examination employed cotton pledgets⁵ in the patient's ears and in both nasal passages. A dose of two millicuries was administered for the second examination and well counter studies of the cotton pledgets demonstrated an abnormal increase in nasal radioactivity. This resulted in surgery which successfully repaired a dural tear in the region of the cribriform plate.

DISCUSSION

The technical performance of the examination is

relatively simple, although time consuming. Our studies were made somewhat more facile by the acquisition of a dual probe 5 inch rectilinear scanner shortly after this series of patients was begun.

Nine patients were considered to have cisternographic evidence of normal pressure hydrocephalus. Three were successfully operated on and have done well initially. Three more patients were offered shunt procedures but they and/or their families refused for various reasons.

Four patients met the cisternographic criteria for cerebral atrophy. Two of these underwent pneumoencephalography which revealed dilated ventricles but no evidence of increased air over the cerebral convexities. This group of patients does not fit neatly into the normal pressure hydrocephalus or cerebral atrophy group. The suggestion is made that in a patient demonstrating this finding but with a slowed flow cisternographic pattern, the diagnosis is more likely to be cerebral atrophy. Three of eight patients with pneumoencephalographic evidence of cerebral atrophy i.e. ventricular dilatation, cortical thinning and increased air over the convexities, had the cisternographic picture of normal pressure hydrocephalus. One patient showed slowed flow which as mentioned above suggests atrophy and four were cisternographically normal.

CONCLUSION

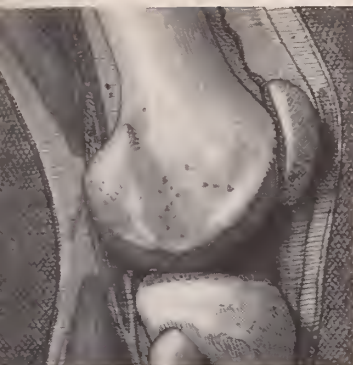
Cisternography with Ytterbium 169 provides a reliable and reproducible method for studying cerebral spinal fluid dynamics. The isotope has attractive imaging and dosimetry advantages over previously available agents. The studies reported have been helpful in identifying patients suspected of having normal pressure hydrocephalus. The importance of a safe and reproducible test for identifying persons with a treatable dementing illness cannot be overemphasized. As our study shows, cisternography must still be used in conjunction with pneumoencephalography at this time. There still

Continued on Page 332

WHEN FLU HITS AND HURTS

HERE

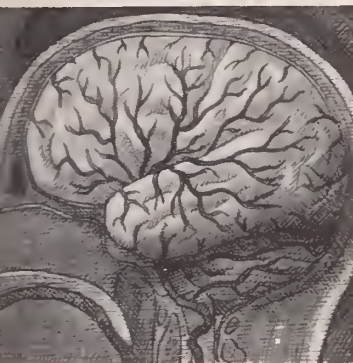
Muscles
and joints




Wherever it hurts, Empirin Compound with Codeine usually provides the symptomatic relief needed.

HERE

Headache



In flu and associated respiratory infection, Empirin Compound with Codeine provides an antitussive bonus in addition to relief of pain and bodily discomfort.

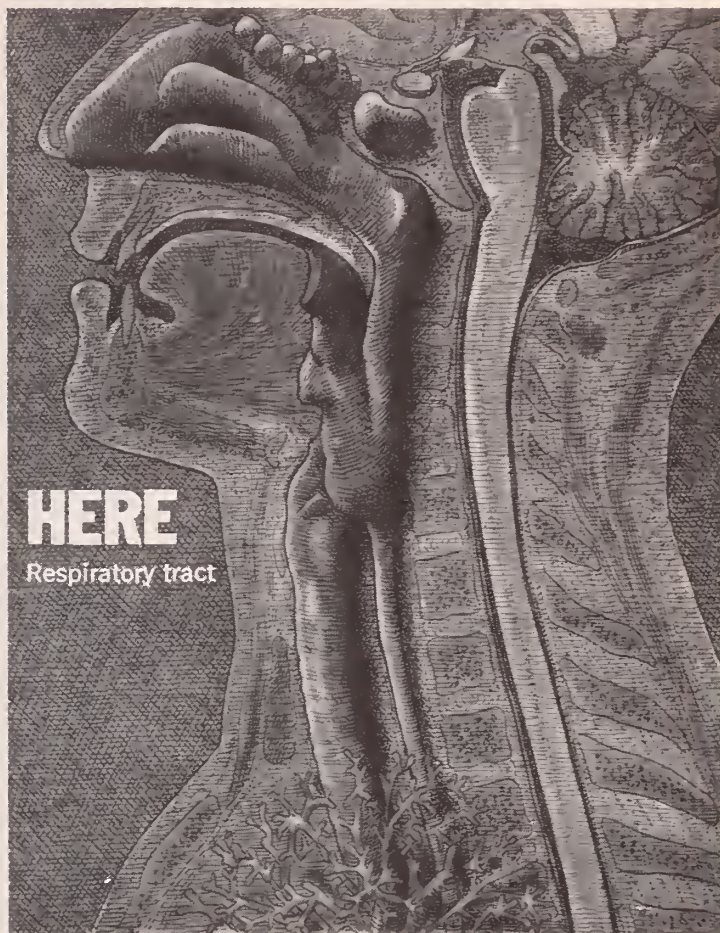
 **prescribing convenience:** up to 5 refills in 6 months, at your discretion (unless restricted by state law); by telephone order in many states.

Empirin Compound with Codeine **No. 3**, codeine phosphate* 32.4 mg. (gr. 1/2); **No. 4**, codeine phosphate* 64.8 mg. (gr. 1) *Warning—may be habit-forming. Each tablet also contains: aspirin gr. 3 1/2, phenacetin gr. 2 1/2, caffeine gr. 1/2.



Wellcome

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Research Triangle Park
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HERE

Respiratory tract

EMPIRIN[®] COMPOUND c CODEINE

#3, codeine phosphate* (32.4 mg.) gr. 1/2

#4, codeine phosphate* (64.8 mg.) gr. 1

The Role of the Detail Man

"I may be prejudiced, but I am very much in favor of the detail men I meet. Most of them are knowledgeable about the drugs they promote and can be a great help in acquainting me with new medication."

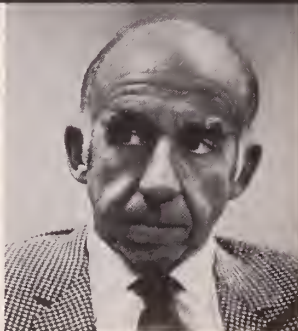
Family Physician's Perception

I think that most general practitioners in this area feel as I do about the detail man. Over the years I have gotten to know most of the men who visit me regularly and they in turn have become aware of my particular interests and the nature of my practice. They, therefore, limit their discussion as much as possible to the areas of interest to me. Since I usually see the same representative again in future visits, it is in his best interest to supply me with the most honest, factual, as well as up-to-date information about his products.



Dr. Willard Gobbell
Family Physician
Encino, California

Dr. Jeremiah Stamler
Chairman
Department of Community
Health and Preventive
Medicine, and Dingman
Professor of Cardiology
Northwestern University
Medical School



"In the total picture of dealing with health problems in this country, there is a potential for detail men to play a meaningful role."

The Positive Influence

My contact with representatives and salesmen of the pharmaceutical industry is the type of contact that people in a medical center, research people, and academic people have and that's in all likelihood on a somewhat different level from that of the practicing physician.

Let me touch on how I personally perceive the role of the sales representative. These men reach large numbers of health professionals. Thus they could be—and at times actually are—disseminators of useful information. They could consistently serve a real educational function in their ability to discuss their products.

At present they do distribute printed material, brochures and pamphlets—some of it scientifically sound and therefore truly useful—as well as some excellent films produced by the pharmaceutical industry. When they function in this

Opinion
&
Dialogue

Is He a Source of Information?

Yes, with certain reservations. The average sales representative has a great fund of information about the drug products he is responsible for. He is usually able to answer most questions fully and intelligently. He can also supply reprints of articles that contain a great deal of information. Here, too, I exercise some caution. I usually accept most of the statements and opinions that I find in the papers and studies which come from the larger teaching facilities. It goes without saying that a physician should also rely on other sources for his information on pharmacology.

Training of Sales Representatives

Ideally, a candidate for the position as a sales representative of a pharmaceutical company should be a graduate pharmacist who has a questioning mind. I don't think this is possible in every case, and so it becomes the responsibility

of the pharmaceutical company to train these individuals comprehensively. It is of very great importance that the detail man's knowledge of the product he represents be constantly reviewed as well as up-dated. This phase of the sales representative's education should be a major responsibility of the medical department of the pharmaceutical company.

I am certain that most of these companies take special care to give their detail men a great deal of information about the products they produce — information about indications, contraindications, side effects and precautions. Yet, although most of the detail men are well informed, some, unfortunately, are not. It might be helpful if sales representatives were reassessed every few years to determine whether or not they are able to fulfill their important function. Incidentally, I feel the same way about periodic assessments of everyone

in the health care field, whether they be general practitioners, surgeons or salesmen.

Value of Sampling

I personally am in favor of limited sampling. I do not use sampling in order to perform clinical testing of a drug. I feel that drug testing should rightly be left to the pharmacology researcher and to the large teaching institutions where such testing can be done in a controlled environment.

I do not use samples as a "starter dose" for my patients. I do, however, find samples of drugs to be of value in that they permit me to see what the particular medication looks like. I get to see the various forms of the particular medication at first hand, and if it is in a liquid form I take the time to taste it. In that way I am able to give my patients more complete information about the particular medications that I prescribe for them.

capacity they are indeed useful; particularly in the fact that they disseminate broadly based educational material and serve not just as "pushers" of their drugs.

The Other Side of the Coin

Obviously, the pharmaceutical companies are not producing all this material as a labor of love — they are in the business of selling products for profit. In this regard the ambitious and improperly motivated sales representative can exert a negative influence on the practicing physician, both by presenting a one-sided picture of his product, and by encouraging the practitioner to depend too heavily on drugs for his total therapy. In these ways, the salesman has often distorted objective reality and undermined his potential role as an educator.

The Industry Responsibility

Since the detail man must be an information resource as well as a representative of his particular pharmaceutical company, he should be carefully selected and

thoroughly trained. That training, perforce, must be an ongoing one. There must be a continuing battle within and with the pharmaceutical industry for high quality not only in the selection and training of its sales representatives, but also in the development of all of its promotional and educational material.

The industry must be ready to accept constructive as well as corrective criticism from experts in the field and consumer spokesmen, and be willing to accept independent peer review. The better educated and prepared the salesman is, the more medically accurate his materials, the better off the pharmaceutical industry, health professionals and the public — i.e., the patients — will be.

Physician Responsibility

The practicing physician is in constant need of up-dated information on therapeutics, including drugs. He should and does make use of drug information and answers to specific questions supplied by the pharmaceutical representative. However, that informa-

tion must not be his main source of continuing education. The practitioner must keep up with what is current by making use of scientific journals, refresher courses, and information received at scientific meetings.

The practicing physician not only has the right, but has the responsibility to demand that the pharmaceutical company and its representatives supply a high level of valid and useful information. I feel certain that if such a high level is demanded by the physician as well as the public, this demand will be met by an alert and concerned pharmaceutical industry.

From my experience, my impression is that sectors of the pharmaceutical industry are indeed ethical. I challenge the industry as a whole to live up to that word in its finest sense.

*Pharmaceutical
Manufacturers Association
1155 Fifteenth Street, N.W.
Washington, D. C. 20005*





A CASE FOR PLURALISM

DR. CHARLES EDWARDS, Assistant Secretary for Health,
U.S. Department of Health, Education and Welfare, says:

"If we are to maintain a pluralistic health care system, we will have to develop a corporate responsibility for the performance of that system.

"No one sector (public or private) alone has the capacity to deal with the complexities of the health care system.

"Pluralism implies a shared responsibility, a recognition that these two great sectors of the American health care system are mutually dependent on one another. And, furthermore, the American people are dependent on both of them, often without any real concern or awareness for whether their health needs are being met by private efforts, public efforts, or some combination of the two.

"Government clearly has a major role in the development of health resources, and in the area of regulation, and in providing financial access to those who would otherwise be severely hampered in their efforts to obtain health services.

"But it is not the place of government to dictate the practice of medicine, to determine who needs what kind of care, and when and where that care should be provided. These are decisions that rightfully belong to, and must remain with, the medical and other health professions.

"If we adopt a national system of health care financing without at the same time making certain that the quality of care is uniformly high and that each dollar — public or private — spent for care is used as efficiently and effectively as possible, then we will have demonstrated once and for all that pluralism cannot work.

"And, if we assume that the task of preserving and strengthening the health care system can be left to government alone, then we will be seeking the impossible. And we will fail.

"Consumers and providers would realize that public funds come ultimately from the private sector. And, no matter how much government might spend for health care, its contribution — just like private spending — represents a burden on the national economy.

"This point may simply be overlooked by many people who believe that the way to solve problems of inflation in the cost of health care is to nationalize the system and to manage the health enterprise in the manner of a publicly owned utility.

"It is clearly a mistake to think that merely shifting health care costs from the private to the public sector would in some way by itself reduce those costs. I am by no means convinced that the Federal Government can necessarily do a more effective job of managing the system than private initiative can.

"An approach to joint, collective management in the public interest might well be found . . . by viewing the health enterprise as comparable to education, transportation, housing and other social functions in which joint public and private initiatives are essential and accepted, if certainly less than perfect."

PSRO and Hospital Delegation

One of the more commonly asked questions as we go around the State is — How does a hospital become exempt from PSRO? Earlier PSRO literature talked about this exemption, and in fact, recent articles have indicated that if a hospital for example does a certain type of medical audit, they qualify for exemption.

The facts of the matter are that a hospital may not be exempted from PSRO review, but, may be delegated responsibility if they meet certain criteria.

The PSRO Program Manual makes it clear that the local PSRO organization is *responsible* for conducting the three levels of hospital review that are required — that is, (1) concurrent review, which includes admission certification continued stay review and discharge planning, (2) medical care evaluation studies, and (3) profile analysis. The manual also points out that in conducting its responsibility for this review, a PSRO *may delegate to hospitals* the responsibility for that review if the hospital meets other criteria that are established in the manual. These other criteria include the following: (1) at least fifty percent of that hospital's active staff have to be members of the local PSRO, (2) there has to be a signed agreement by that hospital staff that they are willing and capable of assuming the responsibilities for the PSRO review in their institution, (3) their utilization review plan would have to reflect the procedures that are necessary now in PSRO review, particularly the conduct of admission certification, and (4) they must share with the local PSRO's certain data in an aggregate sense from their review responsibilities, which are in a sense the reporting requirements the PSRO in turn is responsible for to the Department of Health and Welfare in Washington.

It is the philosophy of the Pine Tree Organization for Professional Standards Review, Inc., in Maine, that we wish to delegate to hospitals wherever possible the review responsibility. As we drafted our plan for conditional PSRO delegation, we reflected that philosophy in writing up our specific plan of action. We will also be conducting educational and instructional meetings around the State with hospital staffs, so we can explain to them just exactly what will be required of them and hope that they will see their way to accept the responsibility for review. It is our belief that the educational responsibilities of the PSRO cannot be met unless the focus of review activity and the focus of continuing medical education activities resulting from PSRO review are conducted in the community hospital themselves.

The Pine Tree Organization for Professional Standards Review has received the endorsement of the Maine Medical Association and the Maine Osteopathic Association.

The Board of Directors of the Pine Tree Organization invites all physicians licensed to practice in Maine to join the organization. A membership application follows. Please complete it and forward it to Pine Tree Organization for Professional Standards Review, Inc. c/o Richard T. Chamberlin, M.D., President, P.O. Box 706, 99 Western Avenue, Augusta, Maine 04330.

PINE TREE ORGANIZATION FOR PROFESSIONAL STANDARDS REVIEW, INC.

MEMBERSHIP APPLICATION

I, _____, presently admitted to practice medicine in the State of Maine, hereby apply for membership in the Pine Tree Organization for Professional Standards Review, Inc.

I understand that there are no financial commitments (i.e. dues) as a condition to my membership and that my membership shall continue as long as I am licensed to practice medicine in the State of Maine or until I voluntarily elect to resign. Resignation may be made at any time in writing directed to the Clerk of Pine Tree Organization for Professional Standards Review, Inc.

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Date

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Name

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Street

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City

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County

Guidelines for Total Parenteral Nutrition

LUCIAN LEAPE, M.D., JOSEPH SCEPPA, M.S., MICHAEL BARZA, M.D.,
AUBREY BOYD, M.D. and MARTHA SACCI, R.N.

I. BACKGROUND

The development of an effective means of providing total intravenous nutrition is one of the most significant advances in patient care in this decade. Since 1968, when Dudrick reported his now famous experiments with Beagle puppies, "hyperalimentation" or total parenteral nutrition (TPN) has become an accepted means of providing nutrition to those who are unable to absorb food by the normal route. Literally thousands of patients have been treated with this method, and the results are truly remarkable.¹⁻⁶

In order to support protein synthesis in the absence of oral intake, it is necessary to provide sufficient calories to permit utilization of amino acids. Dudrick's contribution was the recognition that this required a high concentration of glucose given simultaneously with amino acids. Because of the hyperosmolarity of the resultant solution, it causes sclerosis of peripheral veins, and it must, therefore, be given by a catheter introduced into a central vein, the superior vena cava. Steady, constant infusion over the entire 24-hour period provides much more efficient metabolism of both the amino acids and the glucose, and less loss of amino acids in the urine.

II. INDICATIONS

Total parenteral nutrition is indicated whenever gastrointestinal intake is hazardous, impossible, or insufficient, and is likely to be so for more than a short period of time. Patients with enterocutaneous fistula, short gut syndrome, radiation sickness, inflammatory bowel disease, extensive burns, intractable diarrhea, and renal failure are candidates for TPN.^{7,8}

Because of the hazards associated with its use, it is mandatory that TPN only be instituted when it is truly needed. In addition to the risk, the administration of this form of therapy is expensive and consumes an inordinate amount of time of professional

staff. It should be reserved for those instances where continued inability to aliment is life-threatening. Strict adherence to protocol is necessary to minimize the complications, and the use of TPN should not be entertained if one is unwilling or unable to carry out this routine. A *single* physician who is knowledgeable about the method and its hazards must supervise its administration in any given patient.

III. COMPOSITION

The composition of the parenteral nutrition fluid used at the New England Medical Center Hospital is similar to that originally described by Dudrick. Each liter contains 250 gm of dextrose and 50 gm of protein as casein hydrolysate, as well as various electrolytes, trace elements and vitamins as indicated in Table 1. The composition of the parenteral solution is such that adequate amino acids, glucose, electrolytes, vitamins and minerals are administered by giving 3000 cc per day in an adult or 125 ml/kg/day in an infant or child. This permits normal weight gain or maintenance. When parenteral nutrition is used for a prolonged period of time, it is necessary to give supplemental iron and fresh frozen plasma (250 cc BIW) for essential fatty acids since these are not in the basic solution.

The high concentration of glucose initially produces an osmotic diuresis which may lead to hypertonic dehydration. For this reason the solution is given at half strength for the first day or two, gradually increasing to full strength as the patient's tolerance develops. Initial glycosuria usually subsides, and the administration of insulin is seldom needed. Careful monitoring is necessary, especially at first, to prevent this complication. Most electrolytes are given in excess, relying on renal excretion to maintain balance. Accordingly, more careful monitoring and adjustment of electrolyte concentrations are necessary in patients with reduced renal function. A special solution, utilizing synthetic amino acids, can be used for patients in renal failure.^{10,11}

IV. HAZARDS

Perhaps more than any other accepted modality of therapy, TPN has a significant number of serious hazards associated with its use. For this reason, it should not be used except when clearly indicated.

Drug Therapy Reviews is supported by a grant from the Bingham Associates Funds.

The authors are members of the Subcommittee on Total Parenteral Nutrition, Pharmacy Committee, New England Medical Center Hospital, Boston 02111. Dr. Leape is Subcommittee chairperson.

Address reprint requests to Mr. Sceppa at Box 420, New England Medical Center Hospital, Boston, MA 02111.

TABLE 1

NEW ENGLAND MEDICAL CENTER HOSPITAL
PARENTERAL NUTRITION SOLUTIONS

	ADULT Each 1000 ml contains		PEDIATRIC Each 1000 ml contains		Each 125 ml contains
Casein hydrolysate	50 gm	37.5	gm	4.7	gm
Dextrose	250 gm	200	gm	25	gm
Sodium	30 mEq	34	mEq	4.2	mEq
Potassium	30 mEq	30	mEq	3.8	mEq
Calcium	5 mEq	30	mEq	3.8	mEq
Magnesium	8 mEq	16	mEq	2.0	mEq
Chloride	22 mEq	28	mEq	3.5	mEq
Phosphate	30 mEq	22	mEq	2.7	mEq
Trace Elements					
Zinc	1.0 mg	240	ug	30	ug
Copper	0.3 mg	80	ug	10	ug
Fluoride	0.3 mg	320	ug	40	ug
Iodine	33.0 mg	40	ug	5	ug
Manganese	0.3 mg	80	ug	10	ug
Calories	850	680		85	

Each 24-hour supply contains:

MVI Conc.	3 ml
Vit. B ₁₂	10 ug
Vit. K ₁	1 mg
Folic Acid	1 mg

1 ml of MVI Concentrate contains:

Thiamine (Vit. B ₁)	10 mg
Riboflavin	2 mg
Pyridoxine	3 mg
Niacinamide	20 mg
Pantothenic Acid	5 mg
Ascorbic Acid	100 mg
Vitamin A	2000 u
Vitamin D	200 u
Vitamin E	1 u

Awareness of possible complications and continuous monitoring for their presence is necessary if serious complications are to be avoided. The hazards are divisible into three clear-cut groups, each of which requires a well-developed monitoring system: 1) technical mishaps associated with the placement of the catheter, 2) metabolic derangements related to the composition of the fluid, and 3) infection.

A. Technical Mishaps

Placement of the catheter may be associated with the following complications:

1. Puncture or laceration of the subclavian artery.
 2. Air embolus from aspiration of air while the catheter is being inserted.
 3. Pneumothorax from puncture of the pleura.
 4. Hydrothorax from infusion into the pleural space.
 5. Brachial plexus injury.
 6. Mediastinal hematoma from laceration of innominate vein.
 7. Injury to thoracic duct.
 8. Pericardial tamponade from atrial puncture.
- Later complications include accidental dislodgement

of the catheter, leakage of fluid out of the vein and into the subcutaneous tissue or out of the wound, and breakage of the catheter at the point where it is tied into the vein. Careful attention to details of placement and fixation of the catheter will minimize these complications.

Secondary complications related to the catheter include thrombosis of the superior vena cava, intrahepatic abscess (from accidental placement of the catheter in an intrahepatic vein), and pulmonary embolus secondary either to vena cava thrombosis or candida endocarditis.¹²⁻¹⁴

B. Metabolic Derangements

Table 2, from a paper by Dudrick, summarizes the major metabolic problems that have been observed in patients receiving total parenteral nutrition.

C. Sepsis

By far the most common and most serious complication associated with TPN is infection.¹⁵ Serious sepsis has been reported in as high as 27% of patients receiving TPN, but in several large series of carefully treated patients the infection rate was less than 5%. The difference clearly seems to be the care with which parenteral nutrition is administered. Meticulous attention to details of catheter care, preparation of solution, and avoidance of unnecessary breakage and entering of the line are critical if infection is to be prevented.¹⁴

Patients receiving TPN are frequently infected because of their underlying clinical disorder. Bacteremia is common, so it is not surprising that occasional localization to the TPN catheter occurs. A significant percentage of reported infections associated with TPN have been due to fungus, mostly *Candida* species.¹⁶ Certain factors common to many patients who require TPN also favor the growth of *Candida* organisms: malnutrition and general debilitation, the use of broad spectrum antibiotics, immunosuppressants, and steroids. In addition, *Candida* species grow in the TPN fluid, whereas common bacteria do not. Because of this predilection, strict precautions are required if the risk of infection is to be minimized. Failure to do so will result in an unacceptably high infection rate and significant mortality.

V. MANAGEMENT

A. Insertion of Catheter

There are several technical details concerning the placement of the central venous feeding catheter that are important:

1. The catheter should be inserted under conditions of operating room sterility. If the placement is done in a treatment room, the operator and his assistants should each wear a cap, mask, gown, and gloves.

TABLE 2

METABOLIC PROBLEMS ASSOCIATED WITH PARENTERAL HYPERALIMENTATION*

<i>Problems</i>	<i>Possible Etiologies</i>
I. <i>Glucose metabolism</i>	
A. Hyperglycemia	Excessive total dose or rate of infusion of glucose; inadequate endogenous insulin.
1. Glycosuria	
2. Osmotic diuresis	
3. Hyperosmolar nonketotic dehydration	
4. Coma	
B. Ketoacidosis in diabetic mellitus	Inadequate endogenous insulin response; inadequate exogenous insulin therapy.
C. Post-infusion hypoglycemia	Persistence of endogenous insulin production secondary to prolonged stimulation of islet cells by high carbohydrate infusion.
II. <i>Amino acid metabolism</i>	
A. Hyperchloremic metabolic acidosis	Excessive chloride and monohydrochloride content of crystalline amino acid solutions.
B. Serum amino acid imbalances	Unphysiologic amino acid profile of the nutrient solution.
C. Hyperammonemia	Excessive ammonia in protein hydrolysate solutions; arginine, ornithine, aspartic acid and/or glutamic acid deficiency in amino acid solutions; primary hepatic disorder.
D. Prerenal azotemia	Excessive protein hydrolysate or amino acid infusion.
III. <i>Essential fatty acid metabolism</i>	
A. Serum deficiencies of phospholipid linoleic and/or arachidonic acids; serum elevations of 5, 8, 11-eicosatrienoic acid	Inadequate essential fatty acid administration; inadequate vitamin E administration.
IV. <i>Calcium and phosphorous metabolism</i>	
A. Hypophosphatemia	Inadequate phosphorous administration, redistribution of serum phosphorous into cells and/or bone.
1. Decreased erythrocyte 2, 3-diphosphoglycerate	
2. Increased affinity of hemoglobin for oxygen	
3. Aberrations of erythrocyte intermediary metabolites	
B. Hypocalcemia	Inadequate calcium administration; reciprocal response to phosphorous repletion without simultaneous calcium infusion.
C. Hypercalcemia	Excessive calcium administration with or without high doses of albumin.
D. Vitamin D deficiency; Hypervitaminosis D	Inadequate or excessive vitamin D administration.
V. <i>Miscellaneous</i>	
A. Hypokalemia	Inadequate potassium intake relative to increased requirements for protein anabolism.
B. Hyperkalemia	Excessive potassium administration especially in metabolic acidosis.
C. Hypomagnesemia	Inadequate magnesium administration relative to increased requirements for protein anabolism.
D. Anemia	Iron deficiency; folic acid deficiency; vitamin B ₁₂ deficiency; copper deficiency.
E. Bleeding	Vitamin K deficiency.
F. Hypervitaminosis A	Excessive vitamin A administration.
G. Elevations in SGOT, SGPT and serum alkaline phosphatase	Enzyme induction secondary to accelerated glucose metabolism, possible hepatotoxicity secondary to amino acid imbalance; excessive glycogen and/or fat deposition in the liver.

*Adapted from reference 4.

- The area for insertion should be suitably shaved and prepped as for a surgical procedure.
- The patient should be placed head down to minimize the possibility of air embolism.
- The subclavian vein is usually used in adults, the internal or external jugular in infants. Other sites can be used, but catheters placed in the extremities are particularly prone to infection and thrombosis, so this is not recommended. The cervical route should not be used if there is a tracheostomy because of the risk of infection.
- X-ray confirmation of the position of the catheter is mandatory.* A surprisingly high number will pass to the opposite side, or even an opposite jugular vein. The correct position is with the tip of the catheter in the superior vena cava just above the right atrium.
- The use of Betadine ointment on the site of insertion of the catheter is recommended, together with an occlusive dressing with tape securing the catheter to prevent accidental dislodgement.

B. Precautions for Use

1. The pharmacy should be notified prior to anticipated use of TPN to permit preparation of the solution. The responsible physician must register with the pharmacy before solution will be released.
2. The standard solution prepared by the pharmacy will work well in almost all patients. Its composition is detailed in Table 1. If additional amounts of electrolytes are needed, they should be given by a separate intravenous infusion. If *reduction* in the amount of a constituent is necessary, the pharmacy can prepare a special solution on request. This should be reserved for unusual circumstances since deviations from the standard procedure increase the risk of contamination as well as obviating the advantages of the quarantine. Alterations of the formula may also increase the risk of sepsis. (For example, adding bicarbonate facilitates the growth of staphylococcus in the solution.) Solutions are kept in quarantine for 48 hours after preparation awaiting random culture reports.
3. **ABSOLUTELY NOTHING** may be added to the solution once it leaves the pharmacy. Strict adherence to this rule is necessary if infection is to be prevented. If insulin is needed (quite rare) it should be given separately. If antibiotics or electrolyte supplement are needed, they should be given by a separate intravenous solution.
4. The solution is administered through a 0.45u Millipore filter, the last item in the line. An IVAC pump is recommended.
5. The line and catheter must not be used for drawing blood samples, central venous pressure measurement, or other purposes (except for periodic blood cultures).
6. The usual amount given is 3000 cc per day in an adult. This provides 2550 calories (850 cal/L) as glucose and 150 gm of protein, ample for normal weight maintenance. In infants and children, a dilute solution is used. The usual amount given is 125 cc per kg per day. This provides 4.7 gm of protein and 85 calories as glucose per kg, ample for normal growth.
7. The solution is given at half strength for the first day or two, gradually increasing to full strength as metabolic adaptation takes place. It is critically important that the patient's electrolytes and osmolarity be monitored closely at this time because of the risk of hyperosmolarity.
8. Lost weight is usually regained on this regimen, normal weight maintained, and, in infants, normal growth is to be expected. Failure to gain weight may be an early and important sign of sepsis, and thus daily weights are im-

TABLE 3

TOTAL PARENTERAL NUTRITION METABOLIC MONITORING

1. Daily for first 5 days, then twice weekly:

Date:
WBC
Na
K
Cl
CO₂
BUN
Glucose

2. Every other day for 5 days, then weekly:

Date:
Hgb
Ca
P
Mg
Alb
Glob

3. Every urine specimen: glucose & S.G.

portant in monitoring progress.

9. Fresh frozen plasma 250 cc (25 cc/kg in an infant) is given twice weekly if total parenteral nutrition is required for more than two weeks. This provides essential fatty acids which are not included in the standard solution.

C. Line Care

1. The entire intravenous administration set, including the Millipore filter, is changed by the TPN nurse.
2. Solution is provided by the pharmacy in amounts to last no more than eight hours. The bottles should be kept refrigerated until one hour before they are hung for use, when they are allowed to warm to room temperature.
3. The occlusive dressing about the catheter site is changed every other day using aseptic technique (mask and gloves). This will also be done by the TPN nurse.
4. A blood sample is drawn through the catheter for a culture at the time of line change every other day.

D. Metabolic Monitoring

Especially during the first few days it is critically important that metabolic parameters be carefully monitored. The major initial hazard is hyperglycemia with osmotic diuresis and subsequent dehydration, hyperosmolarity and possible coma. Electrolyte derangements can occur, but they are surprisingly uncommon. The protocol for monitoring is given in Table 3. This must be followed in every patient receiving TPN. Compliance will be monitored by the TPN Subcommittee. Every voided urine should be checked for glucose, but specific treatment is not indicated unless there is significant

persistent hyperglycemia as well. Insulin is rarely necessary if the solution is given at half-strength at first and the concentration gradually increased. Patients should be weighed daily (twice daily in premature infants). Table 3 is to be used as a flow sheet in the patient's record to provide instant appraisal of metabolic status.

E. Infection

Since sepsis is the most common and the most serious complication of TPN it must be constantly suspected. If blood stream infection is present, it is necessary to remove the catheter before it can be cleared. Removal of the catheter alone is all that is necessary in most cases of catheter-induced sepsis. Resolution of signs of clinical sepsis after catheter removal is presumptive evidence of catheter causation.

It is recommended that the catheter be removed if any of the following circumstances obtain:

1. Two consecutive ("routine") blood cultures positive for pathogens in an asymptomatic patient.
2. One positive blood culture in a patient who has otherwise unexplained fever.
3. Strong clinical evidence of infection, even if blood cultures are negative.
4. Evidence of local complications about the catheter site: inflammation, pus, thrombosis, or extravasation.

In a significant percentage of patients so treated, the catheter is not the cause, and removal of the catheter will not affect the clinical course. Nonetheless, such "unnecessary" catheter removals must be done to prevent the occasional overwhelming sepsis and death related to catheter-induced sepsis.

If the patient develops a fever which is otherwise unexplained, administration of TPN should be immediately stopped, and the intravenous line and bottle sent for culture. Blood cultures should be drawn through the catheter and a smear be made for bacteria and *Candida*. If either culture of smear are positive, the line should be removed. Occasional blood cultures positive for saprophytes (*S. epidermidis*) or fever alone are not indications for removal of the catheter. Failure to gain weight alone may indicate sepsis, but additional evidence should be sought before the catheter is removed.

If the catheter is removed, at least 24 hours should elapse before insertion of a new catheter and re-

sumption of TPN. A single catheter should probably not be left in place more than 30 days, since the risk of infection increases with time. Periodic "flush" with amphotericin B, though advocated by some to prevent *Candida* infection, is not recommended because of the potential hazard and the low risk of infection in properly cared-for patients.

Whenever the catheter is removed, the tip should be sent for culture.

F. Termination of Therapy

It is desirable to gradually "taper" TPN, which usually is done as normal alimentation increases. If parenteral nutrition is suddenly stopped, the patient may become severely hypoglycemic. This will not happen if administration is gradually tapered over a period of several days. If there is trouble with the line, or if it is necessary to stop treatment suddenly, 20% glucose solution should be given intravenously and tapered over several days.

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Necrologies

ALLEN I. SAUNDERS, M.D. 1917-1974

Dr. Allen I. Saunders, 57, a psychiatrist, of Augusta, Maine, died on May 17th.

He was born in Boston, Massachusetts on March 28, 1917, son of Maurice M. and Ida S. Saunders.

Dr. Saunders was graduated from Tufts College in 1938 and received his medical degree from Tufts University School of Medicine in 1942. He interned and served a residency at the

Grace-New Haven Community Hospital in Connecticut and took postgraduate courses at the Yale University School of Medicine. He practiced at the Lynn Hospital in Massachusetts and in 1949 located in Augusta where he worked at the State Hospital.

He was a member of the Kennebec County Medical Association, the Maine Medical Association and the American Medical Association.

LEON BABALIAN, M.D. 1889-1974

Dr. Leon Babalian, 84, a dermatologist, of Portland, Maine, died unexpectedly on June 2nd in a local nursing home.

He was born in Paris, France on November 25, 1889, son of Michael and Pauline D. Babalian.

A graduate of the University of Paris in 1909, Dr. Babalian received his medical degree from the University of Paris Medical School in 1921. He interrupted his studies to enlist in the French Army in 1914, serving until 1919, when he retired with the rank of Captain. He was awarded the Croix De Guerre with three citations.

Dr. Babalian practiced at the Hospital St. Louis in Paris and was an assistant there from 1927 to 1937. In 1938, he located in

Portland.

He was an honorary member of the Cumberland County Medical Society and the Maine Medical Association, receiving a 50-year pin in 1971. He was also a member of the American Medical Association, the French Academy of Dermatology and the New England, Montreal and Canadian Dermatological Societies.

Surviving are his wife, the former Anna Furth Terry; two sons, Frederic Peachy of Portland, Oregon and Peter Terry Babalian of Walnut Creek, California; seven grandchildren and a great-grandchild.

DAVID DAVIDSON, M.D. 1908-1974

Dr. David Davidson, 66, of Portland, Maine, died at his home on August 7th.

He was, until his retirement in 1972, a long-time staff member of the Maine Medical Center and the Mercy Hospital.

Dr. Davidson was born in Poland in 1908 and received his medical degree from the University of Vienna in 1936. He came to this country in 1938, where he served a residency at the Western Maine Sanitorium in Hebron. In 1943, he moved to Portland and established his practice in internal medicine.

He was an affiliate member of the Cumberland County Medical

Society and the Maine Medical Association. Dr. Davidson was also a member of the American Medical Association, a former member of the American Thoracic Society and a former president of the Maine Thoracic Society. He was health officer for Cumberland and York Counties from 1946 to 1972, was active in the Greater Portland Association for Retarded Children and was its president for many years.

Surviving are his wife, Dr. Gisela K. Davidson; two daughters, Carol Davidson and Mrs. Lawrence Noone of Manchester, Connecticut; and three grandchildren.

HORACE K. SOWLES, M.D. 1890-1974

Dr. Horace K. Sowles, 83, of Falmouth, Maine, died unexpectedly at his residence on August 31st.

He was born in Barre, Vermont on September 25, 1890, son of John J. and Sara K. Sowles.

Dr. Sowles was graduated from Spaulding High School in Barre, Vermont, Clark University in Worcester, Massachusetts and received his medical degree from Harvard Medical School in 1915. He interned at the Massachusetts General Hospital, became resident surgeon and later surgeon-in-chief at that hospital. He joined the surgical staff at New England Baptist and Beth Israel hospitals and was consulting surgeon at Faulkner Lawrence Memorial and Robert Brigham hospitals until 1947 when he moved to Falmouth. For many years, he served on the staff of the Maine General and Mercy hospitals.

During World War I, he served as Captain in the Army Medical Corps as chief of an operating team of Evacuation Hospital No. 11 during the Argonne Drive.

Dr. Sowles was an honorary member of the Cumberland County Medical Society and the Maine Medical Association, receiving a 50-year pin in 1965 and a 55-year pin in 1970. He was also a member of the American Medical Association, the Massachusetts Medical Society, the Boston and New England Surgical Societies, F.A.C. Society, and founder and member of the American Board of Surgery.

His wife, the former Avis Wheeler, died in 1968. He is survived by a daughter, Mrs. Roland Akers of Falmouth; a son, Horace K. Sowles, Jr. of Falmouth; six grandchildren, several nieces and nephews.

LEONID G. TOUSSAINT, M.D.

1909-1974

Dr. Leonid G. Toussaint, 65, of Fort Kent, Maine, died on October 1st at a Montreal hospital.

He was born in Fort Kent on August 14, 1909, son of Alfred and Phoebe Toussaint.

Graduating from Montreal College in 1930, Dr. Toussaint received his medical degree from the University of Montreal Faculty of Medicine in 1936. He located in Fort Kent the same year.

Dr. Toussaint was an affiliate member of the Aroostook County Medical Society and the Maine Medical Association. He was also a member of the American Medical Association, the Quebec Medical Association, the Canadian Medical Association, and was past president of the medical staff of the Northern Maine Medical Center in Fort Kent.

Surviving are his widow, Georgette Toussaint of Fort Kent; two daughters, Sister Louise of the Ursuline Sisters of Waterville and Mrs. Robert Witham of East Blue Hill; four sons, Gerry of Columbus, Ohio; Robert of St. Louis, Missouri; Dr. Pete Toussaint of Montreal; Paul of Springfield, Massachusetts; five sisters, Miss Rose Toussaint, R.N. of New York, New York; Sister Ann Marie Toussaint of the Immaculate Heart of Mary of Lawrence, Massachusetts; Mrs. Camille Caron of Fort Kent; Mrs. Juliette Kirk of Lynn, Massachusetts and Mrs. Theresa Henderson of Manchester, Connecticut; two brothers, Ludger of Fort Kent and Paul Emile of Northport, Long Island, New York; seven grandchildren, several nieces and nephews.

WILBUR F. LEIGHTON, M.D.

1906-1974

Dr. Wilbur F. Leighton, 67, of Portland, Maine, a Cumberland County medical examiner first appointed in 1935, died on October 25th after an illness of several months.

He was born in Portland on December 11, 1906, son of Dr. Charles M. and Nellie G. Leighton.

Dr. Leighton was graduated from Portland High School, Bowdoin College and received his medical degree from Tufts University School of Medicine in 1932.

Following his internship at the Rhode Island General Hospital and residency at the Providence Lying-In Hospital, Dr. Leighton began private practice in 1934 with his cousin Dr. Adam P. Leighton, at 192 State Street, an office he maintained until his death. He was appointed city physician in 1939, a post his father held 35 years earlier. He resigned in 1946 to devote full time to private practice.

In 1942, he was granted a 20-month leave of absence from the city to serve in World War II in the Pacific with the Navy Medical Corps. He was discharged with the rank of Lieutenant Commander.

Dr. Leighton was a member of the Cumberland County Medical Society, the Maine Medical Association, the New England Association of Obstetrics and Gynecology, and was on the staff of the Maine General, Maine Eye and Ear and St. Barnabus hospitals.

Surviving are his widow, Opal Leighton of Portland; two sons, Frederick of North Conway, New Hampshire and Charles M. of Concord, Massachusetts; a daughter, Mrs. Raymond Monfilleto of Bergenfield, New Jersey; and an aunt, Miss Lida Sherry of Portland.

EUGENE E. O'DONNELL, M.D.

1898-1974

Dr. Eugene E. O'Donnell, 76, of Portland, Maine, a Past President of the Maine Medical Association, died on November 11th in a local hospital after a brief illness.

Born in Lubec, Maine on July 29, 1898, he was the son of Edward E. and Mary R. S. O'Donnell.

Dr. O'Donnell was graduated from Lubec High School, Bates College, attended Bowdoin Medical School and received his medical degree from Yale University School of Medicine in 1923. He interned at the Maine General Hospital and the New Haven University Hospital, where he later became assistant resident surgeon until 1930 when he came to Portland. He had been practicing in Portland until his retirement September 1st.

Dr. O'Donnell was an honorary member of the Cumberland County Medical Society and the Maine Medical Association, receiving a 50-year pin in 1973. He served on the Council of the Maine Medical Association from 1954 to 1957, was Council

Chairman from 1956 to 1957, President-elect of the M.M.A. from 1957 to 1958 and President from 1958 to 1959. He was also a member of the American Medical Association, the New England Surgical Society and a fellow of the American College of Surgeons.

A surgeon-in-chief for several years at the Mercy Hospital and a member of the Maine Medical Center surgical staff, Dr. O'Donnell was honored by medical and surgical circles over the years, as well as being the recipient of the Hibernian Man of the Year Award. He was also a director of the Maine Cancer Society.

Surviving are his wife of 51 years, Mrs. Anne T. O'Donnell of Portland; two daughters, Mrs. Richard Carroll of Boston and Mrs. Paul Barbera of Amherst, New York; a sister, Mrs. Reynold E. Finnegan of Gorham, New Hampshire; six grandchildren, several nieces, nephews and cousins.

of Delegates Meeting of the Maine Medical Association, concerning their last meeting on April 6, 1974.

An announcement was made regarding the October meeting of the York County Medical Society. It will be held Wednesday, October 9, 1974 at the York Hospital, York, Maine. The Committee in charge of arrangements for this meeting is Drs. Kenneth E. Leigh, Chairman, and Lawrence R. Hazzard. This will be an evening meeting also.

Members were urged to attend the Annual Meeting of the Maine Medical Association which is to be held at the Shawmut Inn, Kennebunkport, Maine on June 15-18, 1974.

Delegates and Alternate Delegates were reminded to attend the House of Delegates' meetings, Saturday, June 15th at 2:00 p.m. and Sunday, June 16th at 2:00 p.m. also.

It was also announced that Dr. Willard Bunker is to receive his 55-year pin at the Annual Meeting of the Maine Medical Association.

The speaker for this meeting was Stanley F. Hanson, Jr., Executive Director of the Southern Maine Comprehensive Health Association Inc., Portland, Maine. His subject was "Southern Maine Comprehensive Health Association Inc." (how it involves hospitals, physicians and the laity). A very lively discussion which was rampant with questions and answers followed the presentation by Mr. Hanson. Two of his associates participated in this presentation.

There were 25 physicians and 3 guests present.

MELVIN BACON, M.D., *Secretary*

WASHINGTON

A regular meeting of the Washington County Medical Society was held at the home of Dr. A. Cowan Collins, Dennysville, Maine on May 27, 1974 with fifteen members and guests present.

Meeting opened under the direction of Dr. G. Bernard Shaw, President of the Society.

Minutes of the last meeting were read and approved.

1. A letter to Dr. Walter D. Campbell of the American Academy of Pediatrics about unethical solicitation of patients, read and approved. A copy of the letter to go to Dr. Daniel Hanley, Executive Director of the Maine Medical Association.

2. The motion also made and passed the physician in question would furnish specific names and dates. A letter will go to the immediate superior of the person involved.

3. A discussion of referrals to Maternal and Infant Care Program, particularly as to use of consultants. It was felt in some instances the program was being over-used. Some question of excess fees.

A social hour followed the program.

The regular meeting of the Washington County Medical Society was held on Monday, June 24, 1974 at the home of Dr. A. Cowan Collins, Dennysville, Maine with seven members present.

1. Minutes of last meeting read and approved.

2. Considerable discussion at the meeting in regard to Comprehensive Child Care. All physicians present were quite disturbed by the fact that there seemed to be no coordination of effort in regard to Child Care with much fragmentation; with three various services all taking part apparently not coordinating their efforts.

a. The Public Health Service nurses.

b. Maternal Infant Care program.

c. The new Expanded Child Health Program, which covers from 0-21 yrs. of age.

3. The Public Health Service already has an organized plan with home visits; immunization clinics and general care of children with program difficulty only because of lack of personnel to carry out the various programs.

4. The MIC is mainly on pre-natal and post-natal care, up to approximately one year of age.

5. Extended Child Health Program will apparently cover much of the programs that the Public Health Service nurses are already doing, plus some that the MIC are doing with the Child Health Program: to have immunization clinics, etc. so they will be competing for patients.

The physicians generally felt that if the Extended Child Health program could be incorporated with Public Health Service to offer personnel to help a program that is already established, it would be quite beneficial.

Dr. Randall H. Silver of Ellsworth, Maine was to write a new grant proposal that was to be over-viewed by Dr. Robert G. MacBride of Lubec, Maine and Dr. James Bates of Eastport, Maine. It was hoped that in this program that it would stress the need for an over-all coordinator for these various programs; to prevent fragmentation. As yet, nothing more has been heard on this. Dr. Collins said that he would find out as much as he could, since he personally felt that a coordinator was important.

Dr. Robert G. MacBride of Lubec, Maine, delegate to the Maine Medical Association, spoke relative to the Maine Medical Association meeting that was recently held in Kennebunkport, Maine. Dr. MacBride reported on the results of the various resolutions as presented to the House of Delegates. He also noted the Committee on Maternal & Child Welfare also reported on the fragmentation of medical care which they thought would be detrimental to the physical and emotional health of a child. He also reported on the need of continuing education with certain requirements set forth by the Maine Medical Association in order to continue active membership.

The St. Croix Medical Society apparently was meeting the same evening, as our own meeting. It was felt we should contact them to see whether or not arrangements could be made to meet jointly or stagger the times.

The regular meeting of the Washington County Medical Society was held on September 30, 1974 at the Staff Lounge of the Down East Community Hospital in Machias, Maine.

The meeting opened under the direction of Dr. G. Bernard Shaw of Machias, Maine, President of the Society, with nine members and guests present.

1. Minutes of last meeting read and approved.

2. Further discussion of the various Children Programs, as set up in Washington County. They still continue to be quite fragmented. It was finally decided that we would try to have Charles Scharenberg of the Washington County Health & Planning Council, Brad Konreich of the MIC and Mike Gougler of the Down East Health Service, attend the next meeting in an attempt to coordinate some of the various plans.

3. Dr. A. Cowan Collins invited the Society to meet at his house in Dennysville. He also volunteered to send out the invitations to the various speakers.

4. There was also a discussion of the difficulties in interpreting the various new mental health laws, particularly in reference to getting mental patients admitted to a mental hospital or other places for custodian care. The police are also quite unhappy about transferring mental patients, because of the legal liability.

5. The members also brought up for discussion the possibility of having a conjoint meeting with the St. Croix Medical Society.

Meeting adjourned: 10:00 p.m.

KARL V. LARSON, M.D., *Secretary*

PENOBSCOT

The annual meeting of the Penobscot County Medical Society was held on May 21, 1974 at the Red Lion Restaurant in Bangor, Maine. The meeting was opened by the President, Dr. Dexter J. Clough, 2nd. The minutes of the April meeting were read and approved. There was no correspondence. There were no committee reports and there was no unfinished business.

Under new business, applications for membership into the

Society were received from Drs. Philip Mossman, Russell V. Radcliffe and Robert W. Coon. These applications were reviewed by the Executive Council and recommended to the membership for acceptance. Each applicant was voted upon and accepted into membership unanimously.

The nominating committee presented their nominations for officers and Executive Council. These were as follows: President, Dr. David Sensenig; President-elect, Dr. Thornton W. Merriam, Jr.; Secretary, Dr. Philip G. Hunter; Treasurer, Dr. David S. Beebe; Councilor for three years, Dr. Don L. Maunz; Councilor for two years, Dr. Charles E. Dixon; Councilor for one year, Dr. Wilfred I. Butterfield. It was moved and seconded that the secretary cast one ballot for acceptance for the slate submitted by the nominating committee. This was so voted.

Announcement of the nominees submitted for delegate and alternate delegate to the House of Delegates was presented. Nominees for delegate included Drs. John S. Houlihan, Robert P. Andrews, John A. Woodcock, Francis I. Kittredge and Charles S. Burger. Those for alternate delegate include Drs. William M. Blackwell, Lewis E. Phillips, John A. Ordway, Jack N. Meltzer and John J. Pearson. It was moved, seconded, and passed that the secretary cast one ballot for acceptance for this slate.

Dr. Thornton W. Merriam, Jr. made a motion that the secretary act as a "whip" to see to it that the delegates to the House of Delegates are organized as to their responsibilities as a delegation and to see to it that these delegates attend the meetings of the House of Delegates interim meetings and the annual meeting. This motion was seconded and passed.

Dr. Merriam discussed the resolutions to be presented before the House of Delegates at the annual meeting of the Maine Medical Association in June at Kennebunkport. Three resolutions were discussed. The Kennebec County resolution to allow affiliate membership for "other compelling reasons" was discussed and the delegates instructed to vote affirmative. The Androscoggin County resolution number 1 states in essence that psychiatrists maintain control of the treatment of patients in mental health institutions and that non-medical personnel and administrators assist rather than direct the medical care provided by psychiatrists. After discussion, the delegates were instructed to vote in the affirmative. The Androscoggin County resolution number two that the Maine Medical Association support the position that the third-party payers should re-imburse physicians for services provided to patients on an out-patient basis and in the office as they would do otherwise had the patient been admitted to the hospital. After discussion, the delegates were instructed to vote in the affirmative.

The scientific portion of the meeting was devoted to a discussion on "Anticoagulation To Be or Not To Be." A panel consisting of Drs. James R. Curtis, David Sensenig, and Franklin E. Bragg, II representing the orthopedic, surgical, and medical sides of the question provided a most interesting discussion upon this most controversial topic. Each member of the panel presented a short summation of their views on anticoagulation with frequent citing of the recent literature to support their particular position. Following the panel's presentation, the floor was open to discussion and many questions were presented to the panelists.

As there was no further business, the meeting was adjourned.

PHILIP G. HUNTER, M.D., *Secretary*

LINCOLN-SAGADAHOC

The regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on September 17, 1974.

The President, Dr. Peter A. Evans, called the meeting to order at 8:40 p.m. The secretary read the minutes of the May meeting. The minutes were approved unanimously as read.

Dr. George W. Bostwick announced that there was no old

business and that the summer correspondence was limited to membership problems — Dr. Zeller has transferred to the Ghana Medical Association; an application from a physician moving to another county was returned to that physician for application to whichever county society seems appropriate.

Dr. Richard C. Leck discussed a new Blue Shield contract based upon Usual, Customary, and Reasonable fees. Dr. Daniel Hanley, Executive Director of the Maine Medical Association, described the statistics of the contract. Heated discussion followed.

Dr. Louis Bachrach introduced Dr. Cebrik of Bath, who spoke on Cardiac Pacemakers.

GEORGE W. BOSTWICK, M.D., *Secretary*

KENNEBEC

Forty members and one guest gathered at the Silent Woman Restaurant for the September 19th meeting of the Kennebec County Medical Association. A pleasant social hour and dinner were followed by the Business Meeting which was called to order by the President, Dr. William E. Schumacher. The minutes of the previous meeting were accepted as read.

A number of letters were brought to the attention of the members. First, a letter from Mrs. Feagin of the Woman's Auxiliary thanking the Association for the donation of \$200 to the nursing fund. A letter from the Maine Medical Association was read regarding the next House of Delegates' Meeting and members were urged to volunteer for the special and standing committees. A letter from Dr. Melvin Bacon regarding the Diabetes Detection Program was read. After discussion, it was voted that the county not participate in the Diabetes Detection Week Program and a letter to Dr. Bacon will be sent to this effect.

The following new members were elected to membership in the Association: Drs. Alex W. Jerome and Fe G. Lanuza-Cox. Two new applications for membership were presented. They were from Drs. Robert A. Stram and Alexander M. McPhedran.

Dr. Richard T. Chamberlin then gave a most interesting presentation on PSRO citing the historical background of the legislation and bringing the Association members up-to-date on the status of PSRO activity on both the National and State level. Following his presentation, brief consideration of the revised bylaws was held, but final action was deferred until one section regarding due process was revised. The meeting adjourned at 10:15 p.m.

In cramped but convivial surroundings, the Kennebec County Medical Association met for cocktails and dinner on October 17, 1974 in Augusta, Maine. The business meeting was conducted by Dr. Richard E. Barron in the absence of the President, Dr. William E. Schumacher.

The minutes of the previous meeting were read and accepted.

Under correspondence, a letter from the Maine Medical Association was read by the secretary, listing the various special memberships of the Maine Medical Association. The secretary requested that all those members who qualified for special membership notify him so that the names could be forwarded to the Maine Medical Association.

Two new members were elected, Drs. Robert A. Stram and Alexander M. McPhedran. The applications of two other positions for membership were also read. They were from Drs. Sung W. Cho and James Butler.

Under old business, action on the bylaws was deferred pending revision of one section.

Dr. Barron then introduced Dr. John B. Madigan of Houlton, President of the Maine Medical Association, who addressed the members briefly. The speaker of the meeting, Dr. Jan Drewry, then gave a stimulating talk on renal transplantation and dialysis. Her presentation elicited numerous questions from the audience.

The meeting was adjourned at 9:40 p.m.

KEVIN HILL, M.D., *Secretary*

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A	Allergy (sub-specialty of Internal Medicine)	OPH	Ophthalmology
ANES	Anesthesiology	ORS	Orthopedic Surgery
AM	Aerospace Medicine (special field of Preventive Medicine)	OTO	Otolaryngology
CD	Cardiovascular Disease (sub-specialty of Internal Medicine)	PATH	Pathology
CHP	Child Psychiatry (sub-specialty of Psychiatry)	PD	Pediatrics
CRS	Colon and Rectal Surgery	PDA	Pediatric Allergy (sub-specialty of Pediatrics)
D	Dermatology	PDC	Pediatric Cardiology (sub-specialty of Pediatrics)
DR	Diagnostic Roentgenology (special field of Radiology)	PMR	Physical Medicine and Rehabilitation
FOP	Forensic Pathology (special field of Pathology)	PS	Plastic Surgery
FP	Family Practice	P	Psychiatry
GE	Gastroenterology (sub-specialty of Internal Medicine)	PH	Public Health (special field of Preventive Medicine)
GPM	General Preventive Medicine (special field of Preventive Medicine)	PUD	Pulmonary Diseases (sub-specialty of Internal Medicine)
GS	General Surgery	R	Radiology
IM	Internal Medicine	TR	Therapeutic Radiology (special field of Radiology)
NS	Neurological Surgery	TS	Thoracic Surgery
N	Neurology	U	Urology
OBG	Obstetrics and Gynecology	OO	Unspecified (retired, not in practice, no specialty reported)
OM	Occupational Medicine (special field of Preventive Medicine)	99	Other

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Wolf, Kenneth P. (OPH)	181 Russell St., Lewiston	04240
Wright, Herbert J., Jr. (MED.DIR.)	45 Golder St., Lewiston	04240
Young E. Stanley (FP)	Poland Spring	04274

HONORARY

Branch, Charles F. (PATH,FOP)	69 Gamage Ave., Auburn	04210
Giguere, Eustache N. (FP)	90 Webster St., Lewiston	04240
Goodwin, Ralph A., Sr. (FP)	56 Denison St., Auburn	04210
Greene, Merrill S. F. (FP,OM)	466 Main St., Lewiston	04240
Russell, Daniel F. D. (FP)	Leeds	04263
Sweatt, Linwood A. (OO)	48 Drummond St., Auburn	04210
Williams, James A. (FP)	39 Pleasant St., Mechanic Falls	04256

SENIOR

Busch, John J. (FP,CD)	105 Elm St., Mechanic Falls	04256
Rand, Carleton H. (ORS)	219 Oak St., Lewiston	04240

AFFILIATE

Archambault, Philip L. (ORS)	10 High St., Lewiston	04240
Flanders, Merton N. (OTO)	1 High St., Lewiston	04240
Zanca, Ralph (IM,99)	185 Webster St., Lewiston	04240

AROOSTOOK COUNTY

President — Philip Pines, M.D.

Secretary — Benoit Ouellette, M.D.

Treasurer — Arthur D. Pendleton, M.D.

ACTIVE

Albert, Rodrigue J. (PD)	9 Pleasant St., Fort Kent	04743
Aungst, Melvin R. (FP,GS)	112 W. Main St., Fort Kent	04743
Burr, Charles G. (FP,ANES)	22 Highland Ave., Houlton	04730
Carton, Arthur K. (GS)	7 Park St., Houlton	04730
Chan, Francis W. (ORS)	154 High St., Caribou	04736
Chan, William G. (FP,ANES)	State Rd., Van Buren	04785
Chien, Chang-chi (ANES)	15 Teague St., Caribou	04736
Chow, Alroy A. (IM)	Box 1245, Presque Isle	04769
Collins, H. Douglas (IM)	504 Main St., Caribou	04736
Curtin, Daniel C. (IM)	555 Main St., Presque Isle	04769
Donahue, Clement L. (OPH)	279 So. Main St., Caribou	04736
Dunham, Marguerite C. (PH)	R.F.D. No. 1, Dresden	04342
Fournier, Rino Y. (FP)	380 Main St., Madawaska	04756
Foy, I. Howard (FP)	Arthur R. Gould Mem. Hosp., Presque Isle	04769
Giberson, Raymond G. (GS)	156A Academy St., Presque Isle	04769
Gormley, Eugene G. (GS)	Market Square, Houlton	04730
Gregory, Frederick J. (GS)	504 Main St., Caribou	04736
Griffiths, Eugene B. (FP)	350 Main St., Presque Isle	04769
Hamlin, Paul S. (U)	122 Academy St., Presque Isle	04769
Harrison, George J. (FP)	Market Square, Houlton	04730
Hayward, I. Mead (PD)	504 Main St., Caribou	04736
Helfrich, Harry M., Jr. (IM,CD)	122 Academy St., Presque Isle	04769
Helfrich, Nancy R. (PD)	122 Academy St., Presque Isle	04769
Higgins, George F. (OBG)	122 Academy St., Presque Isle	04769
Ho, Che To (U)	Caribou Clinic, Caribou	04736
Hogan, Chester F. (OTO,OPH)	62 Main St., Houlton	04730
Johnson, Gordon N. (GS)	Box 86, Houlton	04730
Johnson, R. Paul (FP,GS)	Main St., Fort Kent	04743
Kellum, Michael (PD)	29 York St., Caribou	04736
Labbe, Onil B. (FP)	Van Buren	04785
Madigan, John B. (FP,ANES)	Houlton	04730
Mazerolle, Denis R. (OBG)	228 Sweden St., Caribou	04736
Meir, Josef H. (GS)	580 Main St., Caribou	04736
Nicholas, Eric F. (FP)	Mars Hill	04758
O'Brien, William A. (R)	Arthur R. Gould Mem. Hosp., Presque Isle	04769
Ocana, Emilio (FP)	No. Main St., Ashland	04732
Ouellette, Benoit (FP,OBG)	1 James St., Fort Kent	04743
Pendleton, Arthur D. (FP,ANES)	3 Green St., Fort Fairfield	04742
Pines, Philip (FP,GS)	Maine St., Limestone	04750
Price, Richard D. (ANES)	R.F.D. 2, Caribou	04736
Reddy, Kolli P. (FP)	Main St., Washburn	04786
Reynolds, Arthur P. (FP,GS)	29 Second St., Presque Isle	04769
Rideout, Samuel (FP,GS)	Green St., Fort Fairfield	04742
Sanfacon, Philip G. (FP,ANES)	Middle Rd., Colchester, Vt.	05446
Siddiqui, Saleem A. (IM,PUD)	373 Main St., Caribou	04736
Simon, Pedro T. (GS,TS)	373 Main St., Caribou	04736
Smith, Carroll H. (PATH)	Box 785, Presque Isle	04769

Smith, Marshall E. (P)	Pratt Rd., Caribou	04736
Somerville, Robert B. (GS)	45 Hillside St., Presque Isle	04769
Tao, Zui S. (IM)	Main St., Fort Kent	04743
Wakana, Minoru (PATH)	33 Lyndon St., Caribou	04736
White, Leland M. (IM,A)	18 Pleasant St., Caribou	04736
Williams, Edward P. (P.A.)-(FP,OBG)	72 Main St., Houlton	04730
Wilson, G. Ivan (IM)	48 Court St., Houlton	04730
Yaghmai, Madjid (R)	Cary Mem. Hosp., Caribou	04736
Yap, Victor (OTO)	18 Garden Circle, Caribou	04736

HONORARY

Boone, Storer W. (FP,GS)	54 Third Ave., Presque Isle	04769
Kirk, William V. (FP,GS)	Eagle Lake	04739

SENIOR

Brown, Stephen S. (FP)	Mars Hill	04758
Swett, Clyde I. (GS)	18 Sherman St., Island Falls	04747

AFFILIATE

Page, Rosario A. (GS)	RFD No. 2, Caribou	04736
Toussaint, Leonid G. (FP,CD)	Box 9, Fort Kent	04743

JUNIOR

MacDonald, G. Vernon A. (FP)	196 DeBourgogne St., St. Lambert, Quebec, Can.	
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CUMBERLAND COUNTY

President — Douglas R. Hill, M.D.

Secretary-Treasurer — Alfred E. Swett, M.D.

ACTIVE

Abourjaily, Georges S. (GS)	111 Westcott Rd., South Portland	04106
Adams, David L. (C)	131 Chadwick St., Portland	04102
Adams, Marvin C. (OTO)	52 Gilman St., Portland	04102
Agan, Robert W. (ANES)	144 State St., Portland	04101
Allen, Donald F. (PS)	25 Bramhall St., Portland	04102
Anderson, John B. (FP)	Dudley Coe Inf., Bowdoin College, Brunswick	04011
Andrews, Anneliese M. (ANES)	Maine Medical Ctr., Portland	04102
Ansell, Harvey B. (D)	39 Deering St., Portland	04101
Applin, Hilton H. (IM,99)	6 Cumberland St., Brunswick	04011
Aranson, Albert (IM,PUD)	Maine Medical Ctr., Portland	04102
Asali, Louis A. (GS)	29 Deering St., Portland	04101
Ashby, Thomas M. (IM)	2211 Congress St., Portland	04102
Augur, Newell A., Jr. (IM)	175 Vaughan St., Portland	04102
Austin, William H. (IM,99)	125 Chadwick St., Portland	04102
Baldini, Elio (ANES)	22 Bramhall St., Portland	04102
Baldwin, Warren C. (OBG)	42 Deering St., Portland	04101
Barnes, Kirk K. (GS)	Baribeau Dr., Brunswick	04011
Barron, Martin A., Jr. (PD)	18 Lyndon Lane, Cape Elizabeth	04107
Bennert, Harry W., Jr. (OBG)	7 Bramhall St., Portland	04102
Bennet, Eben T. (OBG)	49 Deering St., Portland	04101
Berkovitch, Sumner (PD)	229 Vaughan St., Portland	04102
Bettle, Ronald A. (GS)	Parkview Professional Bldg., Brunswick	04011
Bidwell, Robinson L. (NS,N)	31 Bramhall St., Portland	04102
Binette, Germain A. (R)	Webber Hosp., Biddeford	04005
Bittermann, Donald E. (R)	1168 Westbrook St., Portland	04102
Bliiss, Harry A. (CD)	39 Deering St., Portland	04102
Bonney, James H. (IM)	53 Chadwick St., Portland	04102
Bove, Louis G. (IM)	233 Vaughan St., Portland	04102
Bowman, Peter W. (CHP,P)	56 Baribeau Dr., Brunswick	04011
Boyd, Marjorie A. (IM,M)	19 Bramhall St., Portland	04102
Branson, Sidney R. (FP)	37 Main St., So. Windham	04082
Briggs, Russell C. (R)	Maine Medical Ctr., Portland	04102
Briggs, Winton (IM)	155 Spurwink Ave., Cape Elizabeth	04107
Brinkman, Carl A. (NS)	52 Gilman St., Portland	04102
Britton, Richard C. (GS,VS)	Maine Medical Ctr., Portland	04102
Brown, Donald H. (P)	19 Bramhall St., Portland	04102
Brown, Douglas H. (FP)	1 Birchwood Rd., Cape Elizabeth	04107
Bryant, Daniel C. (IM)	233 Vaughan St., Portland	04102
Budd, William L. (IM)	Parkview Professional Bldg., Brunswick	04011
Bullington, Sunny J. (OPH)	56 Baribeau Dr., Brunswick	04011
Burke, John N. (OBG)	144 State St., Portland	04101
Burnham, Harold N. (FP)	130 Main St., Gorham	04038
Burns, Robert M. (FP)	Box 151, Westbrook	04092
Caldwell, Edgar J. (PUD)	Maine Medical Ctr., Portland	04102
Capron, Charles W. (R)	22 Bramhall St., Portland	04102
Carnes, Timothy D. (IM,NEPH)	95 West St., Portland	04102
Carroll, Ronald J. (IM)	255 Western Prom., Portland	04102
Carson, Robert S. (OBG)	Baribeau Dr., Brunswick	04011
Chatterjee, Manu (IM,CD)	295 Water St., Augusta	04330
Christensen, Harry E. (OM)	South Freeport	04078

Ciampi, Louis A. (FP)	326 Stevens Ave., Portland	04103	Klopp, Donald W. (FP)	Dept. of Anes., Maine Med. Ctr., Portland	04102
Clark, Frederick B. (U)	229 Vaughan St., Portland	04102	Kowles, John E. (OTO)	52 Gilman St., Portland	04102
Clarkin, Charles P. (R)	64 Brookside Rd., Portland	04103	Knowles, Robert M. (OBG)	49 Deering St., Portland	04101
Cole, Donald P. (D)	45 Deering St., Portland	04101	Krueger, Myron K. (IM)	Parkview Professional Bldg., Brunswick	04011
Connen, Thomas F. (IM)	131 Chadwick St., Portland	04102	Kunkle, E. Charles (N,IM)	Maine Medical Ctr., Portland	04102
Contartese, Michael (FP)	149 Main St., Freeport	04032	Labelle, Jean J. (PS)	25 Bramhall St., Portland	04102
Cope, Sara K. (PD)	265 Western Prom., Portland	04102	Lamb, Michael T. (EMER. MED.)	22 Bramhall St., Portland	04102
Cox, Paul M. (PUD)	22 Bramhall St., Portland	04102	Lape, C. Philip (GS)	R.F.D. No. 1, Orrs Island	04066
Crane, Lawrence (ORS)	157 Pine St., Portland	04102	Larned, Frederick S. (IM)	155 Spurwink Ave., Cape Elizabeth	04107
Cummings, George O., Jr. (OTO)	47 Deering St., Portland	04101	Leeber, Donald A. (NEPH)	13 Charles St., Portland	04102
Cunningham, Alice N. (OBG)	Parkview Professional Bldg., Brunswick	04011	Leighton, Wilbur F. (GS)	192 State St., Portland	04101
D'Andrea, Anthony L. (FP)	111 Westcott Rd., South Portland	04106	Leiter, Laban W. (IM,GE)	175 Vaughan St., Portland	04102
Davidson, Gisela K. (IM)	10 Chadwick St., Portland	04102	Leonard, Lawrence M. (ORS)	7 Bramhall St., Portland	04102
Davies, Lloyd G. (FP)	249 Ocean House Rd., Cape Elizabeth	04107	Leschey, William H., Jr. (N)	7 Bramhall St., Portland	04102
Davy, Carmel L. (PATH)	Webber Hosp., Biddeford	04005	Levy, Richard A. (P)	128 Chadwick St., Portland	04102
Davy, John R. (IM)	73 Deering St., Portland	04101	Libby, John T. (OPH)	52 Gilman St., Portland	04102
Delaney, Frederick G. (FP)	130 Main St., Gorham	04038	Lincoln, John R. (ANES)	Cumberland Foreside, Schooner Rocks, Portland	04110
Deming, Howard R. (R)	Maine Medical Ctr., Portland	04102	Llorente, Aldo F. (P)	56 Baribeau Dr., Brunswick	04011
Derry, G. Hermann (FP)	690 Congress St., Portland	04102	Lord, George P. (IM,CD)	7 Bramhall St., Portland	04102
Dillihunt, Richard C. (GS)	7 Bramhall St., Portland	04102	Lorentz, John J. (PMR)	Maine Medical Ctr., Portland	04102
Dinan, John T., Jr. (GS)	321 Brackett St., Portland	04102	Lorimer, Robert V. (OBG)	131 Chadwick St., Apt. 2, Portland	04102
Doby, Tibor (R)	Mercy Hosp., Portland	04101	Loring, William E. (PATH)	7 Riverside Dr., Falmouth Foreside	04105
Doil, Kenneth L. (OBG)	7 Bramhall St., Portland	04102	Lovely, David K. (OTO)	46 Deering St., Portland	04101
Dore, Kenneth E. (FP)	153A Main St., Fryeburg	04037	Lutes, Chris A. (GS,TS)	7 Bramhall St., Portland	04102
Dowling, Patrick A. (ORS)	157 Pine St., Portland	04102	Mack, Francis X. (ANES)	144 State St., Portland	04101
Drake, Emerson H. (GS,TS)	19 Bramhall St., Portland	04102	MacKinnon, Bernard L. (P)	57 Deering St., Portland	04101
Dumdey, Paul H. (IM)	6 Oak Grove Ave., Bath	04530	MacLeod, Cathel A. (CD)	131 Chadwick St., Portland	04102
Dyro, Frances M. (N)	300 Danforth St., Portland	04102	MacVane, William L., Jr. (GS,TS)	211 State St., Portland	04101
Earnhardt, Joseph B. (OBG)	Hammond Rd., Westbrook	04092	Maier, Paul (OPH)	723 Congress St., Portland	04102
Edgar, Joseph H., Jr. (IM,C)	128 Chadwick St., Portland	04102	Maltby, George L. (NS,N)	31 Bramhall St., Portland	04102
Elkins, Alan M. (P)	Maine Medical Ctr., Portland	04102	Markee, Joseph E., Jr. (OBG)	7 Bramhall St., Portland	04012
English, Wesley J., (GS)	18 Bramhall St., Portland	04102	Marshall, Donald F. (U)	Box 116, Bar Mills	04004
Fanning, Joseph P. (PATH)	Dept. of Pathology, Maine Medical Ctr., Portland	04102	Martin, Ralf (IM,CD)	131 Chadwick St., Portland	04102
Ferguson, Franklin F. (PATH)	22 Bramhall St., Portland	04102	Martin, Thomas A. (ORS)	157 Pine St., Portland	04102
Fife, James L. (GS)	65 Baribeau Dr., Brunswick	04011	Martin, Thomas A., Jr. (ORS)	48 Gilman St., Portland	04102
Finks, Henry B. (FP)	22 Lunt Rd., Falmouth	04105	Matthews, Edward C. (PD,PDC)	229 Vaughan St., Portland	04102
Fish, Nicholas (CP)	12 Sturdivent Rd., Cumberland Foreside	04110	Mazzone, Giovanni (FP)	499 Stevens Ave., Portland	04103
Fox, Francis H. (PD,N)	83 West St., Portland	04102	McAfee, Robert E. (GS,99)	7 Bramhall St., Portland	04102
Geer, Charles R. (FP)	208 Vaughan St., Portland	04102	McCann, Eugene C. (OBG)	49 Deering St., Portland	04101
Geer, George L., Jr. (FP)	208 Vaughan St., Portland	04102	McFarland, Edward A. (FP,ANES)	Baribeau Dr., Brunswick	04011
Geyerhahn, George (FP,IM)	73 Deering St., Portland	04101	McGuire, Stuart W. (OPH)	131 State St., Portland	04101
Gibbons, John F. (R)	22 Bramhall St., Portland	04102	McIntire, Barron F., Jr. (FP,IM)	13 W. Elm St., Yarmouth	04096
Ginn, Fred L. (PATH)	Dept. of Pathology, Maine Med. Ctr., Portland	04102	McLean, E. Allan (OBG)	29 Deering St., Portland	04101
Givertz, Bernard (CD,IM)	131 Chadwick St., Portland	04102	McManamy, Eugene P. (GS)	72 West St., Portland	04102
Glassmire, Charles R. (IM)	37 Deering St., Portland	04101	McMichael, Morton (P)	73 Deering St., Portland	04101
Gluck, Kenneth A. (FP)	So. High St., Bridgton	04009	Miller, Buell A. (OBG)	7 Bramhall St., Portland	04102
Godsoe, John A. (ORS)	48 Gilman St., Portland	04102	Miniutti, Gloria M. (P)	29 Deering St., Portland	04101
Goduti, Richard J. (OPH)	9 Deering St., Portland	04101	Minton, Paul R. (CD)	131 Chadwick St., Portland	04102
Goffin, Floyd B. (OTO)	56 Baribeau Dr., Brunswick	04011	Monaghan, Stephen E. (ORS)	7 Bramhall St., Portland	04102
Goldfarb, Walter B. (GS)	72 West St., Portland	04102	Monkhouse, William A. (FP,OM)	131 State St., Portland	04101
Good, Philip G. (PD)	54 Edison Dr., Augusta	04330	Morrison, Robert M. (OBG)	148 State St., Portland	04101
Gottlieb, Brian M. (P)	Durham Rd., Freeport	04032	Morton, Jeremy R. (TS,CS)	321 Brackett St., Portland	04102
Greco, Edward A., Jr. (IM)	111 Westcott St., South Portland	04106	Moulton, Albert W., Jr. (OPH)	180 State St., Portland	04101
Haak, Rudy (ANES)	Parkview Mem. Hosp., Brunswick	04011	Nelson, Bruce D. (U,GS)	229 Vaughan St., Portland	04102
Hall, William J., III (IM)	25 Bramhall St., Portland	04102	Olmsted, Burton L. (PS)	73 Deering St., Portland	04101
Hallee, Theodore J. (IM,NEPH)	155 Spurwink Ave., Cape Elizabeth	04107	Orbeton, Everett A. (PD,PDA)	131 Chadwick St., Portland	04102
Hallett, George W. (PD)	22 Bramhall St., Portland	04102	Osher, Harold L. (IM,CD)	131 Chadwick St., Portland	04102
Hanley, Daniel F. (FP,ORS)	Box 250, Brunswick	04011	Ottum, Alvin E. (OBG)	148 State St., Portland	04101
Hannemann, Joseph H. (R)	22 Bramhall St., Portland	04102	Packard, Andrew B. (R)	Maine Medical Ctr., Portland	04102
Hardy, Edmund W. (IM)	134 U.S. Rt. 1, Falmouth	04105	Parsons, Alice H. (ANES)	240 Harvard St., Apt. 9B, Portland	04103
Haverty, Carolina Ines (ANES)	1851 Washington Ave., Portland	04103	Paulding, Stephen B. (IM,FP)	134 U.S. Rt. 1, Falmouth	04105
Hawkes, Richard S. (IM)	233 Vaughan St., Portland	04102	Pawle, Robert H. (FP)	251 U.S. Rt. 1, Falmouth	04105
Heath, Gordon A. (P,CP)	22 Bramhall St., Portland	04102	Pennoyer, Douglass C. (GS)	112 Vaughan St., Portland	04102
Heifetz, Ralph (PD)	173 State St., Portland	04101	Penta, Walter E. (FP,OM)	316 Woodford St., Portland	04103
Herrera, Benjamin S. (FP)	Mallett Ave., Freeport	04032	Phelps, Paulding (IM,RHEU)	229 Vaughan St., Portland	04102
Hiebert, Clement A. (GS,TS)	321 Brackett St., Portland	04102	Pogue, Jackson S. (FP)	529 Gilmore Ave., Trafford, Pa.	15085
Hill, Douglas R. (FP)	855 Sawyer St., South Portland	04106	Poliner, Irving J. (IM,GE)	95 West St., Portland	04102
Hinckley, Harris (FP)	331 Cottage Rd., South Portland	04106	Polisner, Saul R. (OPH)	143 Vaughan St., Portland	04102
Hotelling, David R. (IM,END)	190 Pine St., Portland	04102	Porter, Joseph E. (PATH)	22 Bramhall St., Portland	04102
Iverson, Andrew P., Jr. (U)	25 Bramhall St., Portland	04102	Proudian, Paul O. (FP,P)	776 Main St., Westbrook	04092
Jackson, Carl S. (P)	22 Bramhall St., Portland	04102	Provost, Pierre E. (OTO)	157 Pine St., Portland	04102
Jacobson, Payson B. (OPH)	295 Brighton Ave., Portland	04102	Ray, Ferris S. (GS)	7 Bramhall St., Portland	04102
Johnson, Albert C. (OTO)	131 Chadwick St., Portland	04102	Read, Frank W. (OPH)	9 Deering St., Portland	04101
Johnson, Gaylen W. (GS)	Parkview Professional Bldg., Brunswick	04011	Rice, John D., Jr. (PATH)	144 State St., Portland	04101
Johnston, Hugh H. (ENDOC.)	Maine Medical Ctr., Portland	04102	Richards, A. Dewey (FP)	Bridgton Family Med. Ctr., Bridgton	04009
Keen, Ernest D. (ER OFFICER)	Mercy Hospital, Portland	04101	Robinson, Hugh P. (U)	229 Vaughan St., Portland	04102
Kent, Stanley W. (OBG)	42 Deering St., Portland	04101	Rogers, Albert M. (ORS)	48 Gilman St., Portland	04102
Kilgallen, John D. (R)	Mercy Hospital, Portland	04101	Rubins, Nina B. (FP)	E.A. Center Mem. Clinic, Steep Falls	04085
Kimura, Takanori (FP)	Box C, Pownal	04069	Rubins, Talivaldis (FP,IM)	E.A. Center Mem. Clinic, Steep Falls	04085
			Sager, George F. (GS)	7 Bramhall St., Portland	04102

Santoro, Domenico A. (IM)	43 Deering St., Portland	04101
Saunders, Norman W. (IM)	233 Vaughan St., Portland	04102
Sawyer, Howard P., Jr. (ANES)	11 Bramhall St., Portland	04102
Selva, Irving L., Jr. (R)	22 Bramhall St., Portland	04102
Serrage, Elizabeth G. (OPH)	87A Ocean St., South Portland	04106
Serrage, John C. (PD)	229 Vaughan St., Portland	04102
Shapiro, Morrill (GS)	7 Bramhall St., Portland	04102
Skilkin, Charles E. (OBG)	111 Westcott Rd., South Portland	04106
Sommer, Robert G. (D)	7 Bramhall St., Portland	04102
Soreff, Stephen M. (P)	Maine Medical Ctr., Portland	04102
Southall, Rogers C. (ORS)	157 Pine St., Portland	04102
Stocks, Joseph F. (PATH,PD)	22 Bramhall St., Portland	04102
Storer, Daniel P. (IM,99)	108 Fessenden St., Portland	04103
Strach, Toffield B. J. (IM,CD)	3 Deering St., Portland	04101
Strauss, William T. (FP,IM)	Box 547, Brunswick	04011
Stroud, Geoffrey A. (FP)	65 Baribeau Dr., Brunswick	04011
Swett, Alfred E. (R)	20 Parsons Rd., Portland	04103
Sylvester, Stanley B. (OM)	Box 548, Portland	04112
Szelenyi, Ernest (PUD,IM)	Box C, Pownal	04069
Taxiarchis, Louis N. (PATH)	R.F.D. No. 1, West Buxton	04093
Taylor, William C. (PD)	7 Michelangelo St., Latham, N.Y.	12110
Taylor, William F. (IM)	134 U. S. Rte. 1, Falmouth	04105
Telfeian, Alphonse (P)	321 Brackett St., Portland	04102
Tetreau, William J. (IM)	111 Westcott Rd., South Portland	04106
Thompson, Philip P., Jr. (IM,99)	131 Chadwick St., Portland	04102
Timothy, Robert P. (U)	229 Vaughan St., Portland	04102
Trask, Henry M. (FP,GS)	24 Hersey St., Portland	04103
Turcotte, Guy N. (P)	7 Bramhall St., Portland	04102
Turgeon, Raphael F. (FP,GS)	367 Main St., Westbrook	04092
Turnbull, Elliott D. (FP)	Elm House, Naples	04055
Van Deventer, Wilhelm H. J. (ANES)	R.F.D. No. 1, Mere Point Rd., Brunswick	04011
Van Lonkhuyzen, Maurice (OPH)	131 State St., Portland	04101
Villandry, Philip J. (ANES)	22 Bramhall St., Portland	04102
Voss, Carlyle B. (P)	22 Bramhall St., Portland	04102
Walker, Douglass W. (PD)	Maine Medical Ctr., Portland	04102
Walsh, Andrew C. (PMR)	144 State St., Portland	04101
Ware, Roland G., Jr. (R)	22 Bramhall St., Portland	04102
Weaver, Michael L. (GS)	10 Water St., Brunswick	04011
Webber, Peter B. (IM)	233 Vaughan St., Portland	04102
White, Chester W., Jr. (ANES,99)	22 Bramhall St., Portland	04102
White, William J. (FP)	1 Mitchell Rd., South Portland	04106
White, Richard L. (TS,CS)	7 Bramhall St., Portland	04102
Whitney, Philip G. (IM)	233 Vaughan St., Portland	04102
Wilks, Joseph L. (OBG)	7 Bramhall St., Portland	04102
Wilson, Donald W. (N)	52 Gilman St., Portland	04102
Winkelbauer, Rudolf G. (P.A.)-(OBG)	62 Baribeau Dr., Brunswick	04011
Wyman, David S. (IM)	233 Vaughan St., Portland	04102
Young, William J. (ER)	Mercy Hosp., Portland	04101
Zerner, John (OBG)	49 Deering St., Portland	04101
Zolov, Benjamin (P.A.)-(A,IM)	296 Congress St., Portland	04101

HONORARY

Babalian, Leon (D)	645 Congress St., Portland	04101
Bischoffberger, John M. (FP)	Naples	04055
Blaisdell, Elton R. (IM,CD)	223 Vaughan St., Portland	04102
Blumberg, Edward (OO)	6316 Strickland Ave., Brooklyn, N.Y.	11234
Cohen, Abram I. (OTO,A)	Smith St., Harrison	04040
Curtis, Winifred W. (FP)	Bailey Island	04003
Cummings, George O., Sr. (OTO)	47 Deering St., Portland	04101
Fogg, C. Eugene (OO)	Peaks Island	04108
Freeman, William E. (FP)	107 Main St., Yarmouth	04096
Lombard, Reginald T. (FP,OBG)	793 Main St., South Portland	04106
Melnick, Jacob (FP)	261 Congress St., Portland	04101
Moulton, Albert W., Sr. (OPH)	180 State St., Portland	04101
O'Donnell, Eugene E. (GS)	Mercy Hosp., Portland	04101
Patterson, James (FP)	Apt. 10D, 45 Western Prom., Portland	04101
Peterson, Herman C. (FP,PD)	Chebeaque Island	04017
Sowles, Horace K. (OO)	413 Blackstrap Rd., Falmouth	04105
Stevens, Theodore M. (OBG)	148 State St., Portland	04101
Webber, Isaac M. (GS)	29 Deering St., Portland	04101

SENIOR

Casey, William L. (ORS)	(Address, Unknown)	
Douphinett, Otis J. (OPH)	763 Congress St., Portland	04102
Johnson, Oscar R. (D)	9 Parsons Rd., Portland	04103
Lappin, John J. (OTO)	171 State St., Portland	04101
Marston, Paul C. (FP)	Kezar Falls	04047
McCrum, Philip H. (FP,OBG)	15 Fairlawn Ave., South Portland	04106
Miller, Thor (FP)	752 Main St., Westbrook	04092
Scolten, Adrian H. (D)	32 Deering St., Portland	04101
Sidwell-Thompson, Doris M. (OO)	R.F.D. Whittier Rd., W. Ossipee, N.H.	03890

Tabachnick, Henry M. (IM)	110 Park Ave., Portland	04101
Urjanis, Janis (FP)	710 Cannons Lane, Louisville, Ky.	40206
Whittier, Alice A. S. (PD)	143 Neal St., Portland	04102
Wight, Donald G. (FP)	30 Mitchell Rd., South Portland	04106

AFFILIATE

Davidson, David (IM)	10 Chadwick St., Portland	04102
Davis, Paul V. (FP)	530 Pinehurst Dr., Spring Hill, Fla.	33512
Dylberg, Norman E. (FP,OBG)	Box 76, R.F.D. No. 4, Portland	04110
Huntress, Roderick L. (OO)	Box 419, North Windham	04062
Laughlin, K. Alexander (OBG)	201 State St., Portland	04101
Melkis, Andrew (P)	Box 161, Gray	04039
Morrison, Alvin A. (GS)	165 Glenwood Ave., Portland	04103
Titherington, John B. (OO)	Shore Rd., Bremen	04551
Ward, John V. (OO)	8 Waites Landing Rd., Falmouth Foreside	04105

JUNIOR

Kaemmer, Arthur W. (PD)	Maine Medical Ctr., Portland	04102
McLeskey, Charles H. (Intern)	Maine Medical Ctr., Portland	04102
Phelps, Hugh M. (RAD. THERAPY)	Maine Medical Ctr., Portland	04102
Salvo, Anthony F. (Resident)	25 Woodfield Rd., Portland	04102
Thurber, Charles F. (IM)	Maine Medical Ctr., Portland	04102

SERVICE

Burnett, Claude A., Jr. (GS,TS)	Crathes, Seal Harbor	04675
Gates, Clifford W. (CAPT) (R)	MC, USN, Naval Station Disp., Box 60, FPO, San Francisco, Calif.	96610
Iszard, David M. (FP,IM)	c/o Peace Corps, 806 Conn. Ave., Washington, D.C.	20006
Stephenson, Richard B. (GS)	Bldg. 1, Rm. 118, National Institutes of Health, Bethesda, Md.	20014

FRANKLIN COUNTY

President — Paul A. Brinkman, M.D.
Secretary-Treasurer — Hays G. Bowne, M.D.

ACTIVE

Alilin, Eleuterio S. (FP)	Box 13, Fayette	04344
Armstrong, Paul E. (FP)	25 Park St., Madison	04950
Blumenstein, Harold I. (R)	Hill House, Cutler Lane, Farmington	04938
Bowne, Hays G. (FP)	Strong	04983
Brinkman, Paul A. (GS)	Farmington	04938
Condit, Roger E. (FP)	23 Court St., Farmington	04938
DeGrinney, Joseph T. (FP)	RHA, Rt. 133, Jay	04239
Dixon, David C. (GS)	Box 792, Farmington	04938
Duffy, Wallace H. (FP,GS)	100 Main St., Farmington	04938
Eastman, Harvey W. (FP,P)	Box 188, Livermore Falls	04254
Eastman, H. Wilson (FP)	15 Millett St., Livermore Falls	04254
Ekinci, Fevzi (IM,CD)	42 Main St., Livermore Falls	04254
Fiorica, Gaetano T. (FP)	12 Church St., Chisholm	04222
Floyd, Paul E. (OPH,OTO)	2 Middle St., Farmington	04938
McMahon, James (PD)	Strong	04983
Onion, Daniel K. (IM)	RFD No. 3, Farmington	04938
Record, Nelson B., Jr. (IM)	Main St., Farmington	04938
Smith, Christopher S. (FP)	Box 232, Farmington	04938

SENIOR

Brinkman, Harry (GS)	47 Perham St., Farmington	04938
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AFFILIATE

Colley, Maynard B. (FP,ANES)	14 Main St., Farmington	04938
Reed, James W. (R)	18 Main St., Farmington	04938

HANCOCK COUNTY

President — Bradley E. Brownlow, M.D.
Secretary-Treasurer — John C. Van Pelt, M.D.

ACTIVE

Britt, Richard W. (FP,OTO)	Blue Hill	04614
Brownlow, Bradley E. (FP)	Blue Hill Mem. Hosp., Blue Hill	04614
Bromley, William C. (OPH)	State St., Ellsworth	04605
Clason, Walton P. C. (IM,CD)	12 Pleasant St., Ellsworth	04605
Cooper, Llewellyn W. (GS)	Hancock St., Bar Harbor	04609
Fuller, George G. (R)	50 Union St., Ellsworth	04605
Garnett, James H. P. (GS)	Northeast Harbor	04662
Gerdes, Kendall A. (FP)	Kimball Rd., Northeast Harbor	04662
Gilmore, Edward B. (IM)	Hancock St., Bar Harbor	04609

Hewson, John R. (FP) 239 Brock Ave., N., Montreal 263 W, Quebec, Can. 04614
 Howe, Chester W. (GS) Blue Hill 04614
 Hsu, Theodore S. (OPH) 14 High St., Ellsworth 04605
 Isil, Neal H. (P.A.)-(ANES) 50 Union St., Ellsworth 04605
 Joost, Arthur M., Jr. (FP) Box 520, Bucksport 04416
 Knickerbocker, Charles H. (IM,CD) 15 High St., Bar Harbor 04609
 Kopfmann, Harry (FP) Deer Isle 04627
 LaCasce, Joseph H. (IM) 50 Union St., Ellsworth 04605
 Lambdin, Morris A. (PD) Maine Coast Mem. Hosp., Ellsworth 04605
 McIntyre, John D. (P.A.)-(OBG) 50 Union St., Ellsworth 04605
 Murray, John G., Jr. (FP) Blue Hill Mem. Hosp., Blue Hill 04614
 Pease, Horace B. (IM) Maine Coast Mem. Hosp., Ellsworth 04605
 Russell, Robert F. (FP) Castine 04421
 Silver, Randall H. (PD) Maine Coast Mem. Hosp., Ellsworth 04605
 Stewart, Nancy H. (OBG,ANES) Hancock St., Bar Harbor 04609
 Stewart, Winston G. (FP,OM) Hancock St., Bar Harbor 04609
 Suyama, Eji (GS) 58 W. Main St., Ellsworth 04605
 Thegen, W. Edward (FP,OM) Elm St., Bucksport 04416
 Van Pelt, John C. (PD,N) 50 Union St., Ellsworth 04605
 Wilbur, Herbert T., Jr. (FP,ANES) 100 Main St., Southwest Harbor 04679
 Williamson, Elizabeth E. (ANES) Blue Hill 04614
 Williamson, Russell G. (GS) Blue Hill Mem. Hosp., Blue Hill 04614
 Wilson, Robert D. (R) Mt. Desert Island Hosp., Bar Harbor 04609

SENIOR

Gray, Philip L. (FP,OPH) Blue Hill 04614

AFFILIATE

Coffin, Ernest L. (FP) Northeast Harbor 04662

KENNEBEC COUNTY

President — Richard R. Dole, M.D.

Secretary-Treasurer — Kevin Hill, M.D.

ACTIVE

Aslam, Padiath A. (GS,TS,CS) 89 Hospital St., Augusta 04330
 Atallah, Antoine A. (IM) 325 Kennedy Mem. Dr., Waterville 04901
 Atlee, William E., Jr. (OPH) 221 Eastern Ave., Augusta 04330
 Barnard, John M. H. (FP) Doctors Park, 89 Hospital St., Augusta 04330
 Barron, Richard E. (FP,GS) Western Ave., Winthrop 04364
 Beckerman, Stanley C. (IM) 175 Silver St., Waterville 04901
 Beebe, David S. (U) 454 State St., Bangor 04401
 Bennett, Ralph G., Jr. (R)325B Kennedy Mem. Dr., Waterville 04901
 Betts, Anthony (PATH) Thayer Hospital, Waterville 04901
 Bhatnagar, Hemendra N. (OTO) 67 Silver St., Waterville 04901
 Bolduc, Jean L. (FP,GS) 325 Kennedy Dr., Waterville 04901
 Brann, Henry A. (FP) 31 Weston Ave., Augusta 04330
 Callahan, Robert L. (TS) 12 Spruce St., Augusta 04330
 Canai, Ory D. (P) 193 Cony St., Augusta 04330
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 Chafi, Jafar (P.A.)-(OBG) 221 Eastern Ave., Augusta 04330
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 Chamberlin, Richard T. (IM) Thayer Hospital, Waterville 04901
 Chasse, Richard L. (FP,GS) 18 Park St., Waterville 04901
 Chen, John T. (R) Cherry Hill Ter., Waterville 04901
 Cheng, Hsueh-ching (IM) 12 Spruce St., Augusta 04330
 Ciembroniewicz, Julius E. (NS,N) 18 Spruce St., Augusta 04330
 Crawford, Joseph R. (FP,GS) 12 Spruce St., Augusta 04330
 Cruickshank, Frank S., Jr. (R) Eaton Dr., Waterville 04901
 Culver, Raymond E. (IM,GE) 325 Kennedy Mem. Dr., Waterville 04901
 Dachslager, Philip (FP,IM) 72 Winthrop St., Augusta 04330
 Darlington, Brinton T. (IM) Doctors Park, 89 Hospital St., Augusta 04330
 Davis, Earle M. (U) 325 Kennedy Dr., Waterville 04901
 deFreitas, Andre M. (P) 19 Cushnoe Dr., Augusta 04330
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 Dunn, Robert H. (P) 105 Dresden Ave., Gardiner 04345
 Emanuel, Meyer (U) Veterans Adm., Togus 04330
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 Goodof, Irving I. (PATH) Thayer Hospital, Waterville 04901
 Gould, George I. (FP,ANES) 79 Main St., Richmond 04357
 Green, Kenneth W. (ANES) 12 Eaton Dr., Waterville 04901
 Guillemette, Maurice R. (FP) 107 Water St., Augusta 04330
 Guite, L. Armand, Jr. (GS) 325 Kennedy Mem. Dr., Waterville 04901
 Halperin, David C. (GS) 89 Hospital St., Augusta 04330
 Hayes, James C. (PATH) 6 E. Chestnut St., Augusta 04330
 Hiebel, Joseph J. (IM,99) 179 Main St., Waterville 04901
 Hill, Anthony B. (IM) 258 Main St., Saco 04072
 Hill, Kevin (OPH) 325A Kennedy Dr., Waterville 04901
 Hornberger, H. Richard (TS,GS) 325 Kennedy Dr., Waterville 04901
 Hurd, Allan C. (OPH) 5 Hasson St., Hallowell 04347
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 Jones, Gareth O. M. (ANES) Augusta Gen. Hosp., Augusta 04330
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 Kindig, Warren V. (PATH) Dept. of Pathology, Augusta Gen. Hosp., Augusta 04330
 Lagomarsino, Fred J. (OPH) 325A Kennedy Mem. Dr., Waterville 04901
 Leadley, Peter J. (IM) Box 243, Manchester 04351
 Lepore, Anthony E. (FP,CD) 128 Main Ave., Gardiner 04345
 Letourneau, J. Alfred (OBG) 325 Kennedy Mem. Dr., Waterville 04901
 Marshall, Joseph A. (GS) 177 Main St., Waterville 04901
 Marshall, Paul A. (ANES) R.F.D. No. 1, Box 121A, Ridge Rd., Fairfield 04937
 Martinak, Joseph F. (FP) Augusta Gen. Hosp., Augusta 04330
 Mathews, Hugh J., Jr. (FP,ANES) 345 Water St., Gardiner 04345
 McIntire, Percy C. (PUD) Johnson Heights, Waterville 04901
 McKendry, James R. (ORS) 12 Spruce St., Augusta 04330
 McLaughlin, Ivan E. (FP,R) Rt. 5A, Gardiner 04345
 Melendy, Oakley A. (GS) Doctors Park, 89 Hospital St., Augusta 04330
 Mepani, Bhupendra (R) Veterans Adm., Togus 04330
 Michaud, Joseph C. (GS) P.O. Box 606, Waterville 04901
 Milliken, Howard H. (IM,CD) R No. 1, Pond Rd., (Manchester), Hallowell 04347
 Mohlar, Robert G. (IM) Doctors Park, 89 Hospital St., Augusta 04330
 Monsivais, Alfredo (IM,P) 1 Western Ave., Winthrop 04364
 Moore, Valentine J. (ANES) Thayer Hospital, Waterville 04901
 Nikolaidis, Demitrios (R) Agias Sophias 5, Thessaloniki, Greece 04901
 Nolin, Laurier E. (IM,CD)325A Kennedy Mem. Dr., Waterville 04901
 O'Connor, Francis J. (R) 4 Woodlawn St., Augusta 04330
 Ohler, Robert L. (IM) Box 42, Veterans Adm., Togus 04330
 Peddie, Harry M. K. (FP) Doctors Park, 89 Hospital St., Augusta 04330
 Pfeiffer, Paul H. (IM,CD) Cherry Hill Ter., Waterville 04901
 Plimpton, Jay R. (OPH) 283 Water St., Augusta 04330
 Poulin, Albert A. (R) Cherry Hill Dr., Waterville 04901
 Poulin, James E. (OTO) 177 Main St., Waterville 04901
 Pratt, Loring W. (OTO) 325 Kennedy Dr., Waterville 04901
 Reynolds, John F. (GS,TS) 325 Kennedy Dr., Waterville 04901
 Richards, Lee W., Jr. (OBG) 89 Hospital St., Augusta 04330
 Robertson, George J. (IM) 1370 Turnpike St., North Andover, Mass. 01845
 Rodriguez, Jose M. (NS) 325 Kennedy Dr., Waterville 04901
 Rohm, Walter (P) Augusta State Hosp., Augusta 04330
 Russell, Theodore M. (PD) Doctors Park, 89 Hospital St., Augusta 04330
 Sanzenbacher, Karl E. (N)325C Kennedy Mem. Dr., Waterville 04901
 Satir, Ahmet (CD,TS) Box 682, Augusta 04330
 Saunders, Allen I. (P) River Rd., R.F.D. 2, Augusta 04330
 Schmidt, Lorrimer M. (MED.ADM.) 13 Elm St., Augusta 04330
 Schumacher, William E. (P) 14 Westwood Rd., MD "B", Augusta 04330
 Schwarz, Harald J. (PATH) Seton Hospital, Waterville 04901
 Seligman, Morris J. (P) Veterans Adm., Togus 04330
 Senenky, Joseph P. (P) Augusta State Hosp., Augusta 04330
 Sewall, Kenneth W. (OBG) 2 School St., Waterville 04901
 Shaw, John H. (GS) 131 Sewall St., Augusta 04330
 Sheehan, Terrance J. (PD) Doctors Park, 89 Hospital St., Augusta 04330
 Shelton, Robert L. (GS) 21 Western Ave., Augusta 04330
 Smith, Kenneth E. (PATH) Veterans Adm., Togus 04330
 Stinchfield, Allan J. (ORS) Box 343, Augusta 04330
 Stucki, Paul (ORS) 325 Kennedy Dr., Waterville 04901
 Sturtevant, Vaughn R. (IM) 325 Kennedy Dr., Waterville 04901
 Szucs, Murrill M., Jr. (C) 14 Gilman St., Waterville 04901
 Takach, Robert J. (OPH) 325A Kennedy Dr., Waterville 04901

Tobin, H. Wayne (P)	Thayer Hospital, Waterville	04901
Towne, Charles E. (FP)	18 Common St., Waterville	04901
Towne, John W. (GS)	325C Kennedy Mem. Dr., Waterville	04901
Trembly, Bruce (NS)	325 Kennedy Dr., Waterville	04901
Tsao, Wu-Ming (FP)	Veterans Adm., Togus	04330
Turner, Fennell P. (GS)	Veterans Adm. Ctr., Togus	04330
Turdelle, Frank J. (GS)	345 State St., Gardiner	04345
Uldall, Stella L. (P,CHP)	Augusta State Hosp., Augusta	04330
Veilleux, Lucien F. (GS)	325 Kennedy Dr., Waterville	04901
Watanabe, Tatsuo (ORS)	325 Kennedy Mem. Dr., Waterville	04901
Wheelwright, Henry J. (IM)	Augusta Gen. Hosp., Augusta	04330
Wren, James C. (IM,CD)	Veterans Adm. Ctr., Togus	04330

HONORARY

Crawford, Albert S. (OO)	3013 C Via Buena Vista, Laguna Hills, Calif.	92653
Goodrich, Blynn O. (FP,99)	45 Roosevelt Ave., Waterville	04901
Hill, Howard F. (OPH)	325A Kennedy Mem. Dr., Waterville	04901
Langer, Ella (PD,GPM)	192 Capitol St., Augusta	04330
McQuillan, Arthur H. (GS)	177 Main St., Waterville	04901
Reynolds, Ralph L. (OBG,GS)	325 Kennedy Mem. Dr., Waterville	04901
Sleeper, Francis H. (OO)	3 Colony Rd., Augusta	04330

SENIOR

Bourassa, Harvey J. (FP,GS)	47 Elm St., Waterville	04901
Bull, Frank B. (FP,GS)	5 Hasson St., Hallowell	04347
Guite, L. Armand, Sr. (OO)	45 Elm St., Waterville	04901
Hirschberger, Celia (P)	Augusta State Hosp., Augusta	04330
Marquardt, Matthias (OO)	109 Cony St., Augusta	04330
Shelton, M. Tieche (GS,OBG)	21 Western Ave., Augusta	04330
Wilder, William D. (FP)	Box 2146, Augusta	04330
Wilson, Robert W. (FP)	Box 962, Jefferson	04348

AFFILIATE

Hurwitz, Alfred (GS)	55 Capitol St., Augusta	04330
McLaughlin, Clarence R. (FP,GS)	Box 191, Gardiner	04345
Reel, John J. (FP)	59 So. Front St., Richmond	04357
Simpson, Margaret R. (P)	2 Sea Barn Rd., Cape Elizabeth	04107

KNOX COUNTY

President - Oram R. Lawry, Jr., M.D.

Secretary-Treasurer - David G. Reed, M.D.

ACTIVE

Ashley, Alta (FP)	Box 87, Monhegan Island	04852
Britt, Robert C. (OBG)	108 Elm St., Camden	04843
Brouwer, Johan (P.A.)-(IM,OBG)	5 Beech St., Rockland	04841
Clarke, Charles N. (IM)	108 Elm St., Camden	04843
Dreher, Robert J. (OPH)	11 Maple St., Rockland	04841
Earle, Ralph P. (FP)	Vinalhaven	04863
Eddy, Robert H. (P.A.)-(IM)	5 Beech St., Rockland	04841
Fuller, Barbara L. (FP)	20 Chestnut St., Rockland	04841
Furman, Robert S. (ORS)	22 White St., Rockland	04841
Giustra, Peter E. (R)	Knox Co. Gen. Hosp., Rockland	04841
Groce, Philip C. (FP)	Box 413, Union	04862
Hardy, Henri R. (FP)	Box 662, Camden	04843
Hawkins, Donald B. (GS)	Atlantic Ave. & Sea St., Camden	04843
Holz, Peter H. (PD)	22 White St., Rockland	04841
Howard, Emery B., Jr. (PD)	23A Summer St., Rockland	04841
Kahn, Richard J. (IM)	22 White St., Rockland	04841
Kangas, Onni C. (OPH)	11 Maple St., Rockland	04841
Kibbe, Frank W. (PD)	RFD 2, Lincolnville	04849
Killoran, Paul J. (R)	Knox County Gen. Hosp., Rockland	04841
King, Merrill J., Jr. (OPH)	Vinal Rd., West Rockport	04865
Langhorne, Allen F. (FP)	87 Limerock St., Rockland	04841
Lathbury, Vincent T. (P)	Medical Arts Building, Rockland	04841
Lawry, Oram R., Jr. (FP)	96 Limerock St., Rockland	04841
Macbride, John J. (P)	22 White St., Rockland	04841
McLellan, William A. (ANES)	Harbor Rd., Camden	04843
Martin, Stuart H. (IM)	108 Elm St., Camden	04843
Millington, Paul A. (FP, ANES)	44 Mountain St., Camden	04843
Morse, Edward K. (GS)	22 White St., Rockland	04841
Nuesse, William E. (U)	22 White St., Rockland	04841
Onat, Mustafa V. (FP, ANES)	St. George	04857
Reed, David G. (OTO)	7 Washington St., Camden	04843
Root, John A. (GS)	22 White St., Rockland	04841
Shrier, Peter R. (OBG)	87 Limerock St., Rockland	04841
Sigafoos, J. Harvey (ANES)	Pleasant Point	04563
Sube, Janis (GS)	108 Elm St., Camden	04843
Ward, William W. (GS,99)	Box 646, Rockland	04841
Warren, Henry S. (FP)	Derby Rd., Islesboro	04848
Wasgatt, Wesley N. (FP)	41 Talbot Ave., Rockland	04841

Waterman, Dorothy (FP)	Waldoboro	04572
Waterman, Richard (FP)	Main St., Waldoboro	04572
White, Henry O. (GS)	22 White St., Rockland	04841
Wickenden, John W. (ORS)	22 White St., Rockland	04841
Williams, Thomas W. (IM)	22 White St., Rockland	04841
Woodruff, Alan F. (IM)	16 Summer St., Rockland	04841
Worthing, Verla E. (ANES)	Box A, Thomaston	04861

HONORARY

Campbell, Fred G. (FP)	Box 484, Warren	04864
Loewenstein, George (OO)	1007 Woodside Dr., Clearwater, Fla.	33516
Naumer, Harry A. (OO)	Lands' End, Port Clyde	04855
Saunders, Sallie H. (OO)	R.F.D., Camden	04843
Stimson, Barbara B. (ORS)	Star Rt. 22-282 Owl's Head	04854

SENIOR

Apollonio, Howard L. (OO)	Box 34, Rockport	04856
Bean, Achsa M. (OO)	Star Route 32, Owl's Head	04854

AFFILIATE

Dennison, Frederick C. (IM)	3 Gilchrist St., Thomaston	04861
Jones, Paul A., Sr. (N.P)	General Delivery, Union	04862
Toungue, Harry G., Jr. (FP)	12 Union St., Camden	04843

LINCOLN-SAGADAHOC COUNTY

President - Peter A. Evans, M.D.

Secretary-Treasurer - George W. Bostwick, M.D.

ACTIVE

Akar, Hamdi (IM,CD)	37 Oak St., Bath	04530
Andrews, John F. (FP)	67 Oak St., Boothbay Harbor	04538
Avantaggio, Frank O., Jr. (GS)	Bristol Rd., Damariscotta	04543
Bachrach, Louis (IM)	17 Meadowbrook Rd., Brunswick	04011
Belknap, Samuel L. (FP)	Damariscotta	04543
Blackburn, Nelson P. (PATH)	Bath Memorial Hosp., Bath	04530
Bostwick, George W. (FP)	Box 388, Newcastle	04553
Burden, Charles E. (PD)	1 North St., Bath	04530
Crichton, Philip S. (R)	Regional Mem. Hosp., Brunswick	04011
Dixon, Robert H. (OTO)	6 Oak Grove Ave., Bath	04530
Doble, Miriam (FP,ANES)	990 Washington St., Bath	04530
Dominici, Raymond H. (GS)	56 Baribeau Dr., Brunswick	04011
Dorogi, Louis V. (GS)	Old Post Rd., Rt. 138, Bowdoinham	04008
Dougherty, John F. (FP)	112 Front St., Bath	04530
Evans, Peter A. (IM)	65 Baribeau Dr., Brunswick	04011
Evans, Richard III (IM)	56 Baribeau Dr., Brunswick	04011
Fichtner, Paul A. (FP)	10 Oak Grove Ave., Bath	04530
Galen, Robert S. (R)	6 Breckan Rd., Brunswick	04011
Giustra, Richard A. (ORS)	56 Baribeau Dr., Brunswick	04011
Gregory, Philip O. (FP,GS)	St. Andrews Hosp., Boothbay Harbor	04538
Griffin, Carl R., Jr. (GS)	61 Atlantic Ave., Boothbay Harbor	04538
Hasson, Robert M. (FP)	Bristol Rd., Damariscotta	04534
Hill, David S. (FP)	10 Oak Grove Ave., Bath	04530
Horstman, Anthony J. (FP)	McKown St., Boothbay Harbor	04538
Hudson, Henry A. (R)	Southport Island	04569
Keating, Anthony J. (FP)	10 Oak Grove Ave., Bath	04530
Kinder, Edward L., Jr. (GS)	1027 Washington St., Bath	04530
Leck, Richard C. (PATH)	Bath Mem. Hosp., Bath	04530
McGuire, Peter F. (FP)	Peary Dr., Brunswick	04011
Morrison, Charles C. (FP)	Damariscotta	04543
Oceretko, Arkadij (GS)	Gov. King Oak Grove Ave., Bath	04530
Powell, Ralph C. (FP)	Damariscotta	04543
Proctor, Thomas E. (FP,GS)	Boothbay Harbor	04538
Rowan, Gilbert R. (FP)	10 Oak Grove Ave., Bath	04530
Schall, David W. (FP)	56 Baribeau Dr., Brunswick	04011
Smith, Jacob (FP,ANES)	709 High St., Bath	04530
Smith, James O. (FP)	118 Front St., Bath	04530
Starks, Pauline G. (ANES)	Pemaquid Point	04561
Stong, Frederick V. (OPH)	Parkview Professional Bldg., Brunswick	04011
Swanson, Ronald A. (R)	Regional Mem. Hosp., Brunswick	04011
Winchenbach, Francis A. (GS)	910 Washington St., Bath	04530
York, Elihu (IM)	62 Baribeau Dr., Brunswick	04011
Zeller, Alan W. (GS)	P.O. Box 383, Newcastle	04553

HONORARY

Bachus, John M. (OO)	3 Breckan Rd., Brunswick	04011
Dalrymple, Sidney C. (OO)	So. Great Rd., So. Lincoln, Mass.	01751

SENIOR

Hamilton, Virginia C. (OO)	South Harpswell	04079
Sherman, Fuller G. (OO)	Spruce Pt., Boothbay Harbor	04538

AFFILIATE

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OXFORD COUNTY

President – Alfred Oestrich, M.D.

Secretary-Treasurer – John B. Makin, Jr., M.D.

ACTIVE

Bean, H. Richard (FP,ANES) 121 Main St., Norway 04268
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PENOBSCOT COUNTY

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ACTIVE

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 Boone, Alan W. (IM) 111 State St., Bangor 04401
 Bouton, Dale C. (ORS) 157B Broadway, Bangor 04401
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 Burke, Paul W. (FP) 5 High St., Newport 04953
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 Chapman, Frank C. (PATH) 200 Somerset St., Millinocket 04462

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JUNIOR

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PISCATAQUIS COUNTY

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Secretary-Treasurer — Robert C. Cornell, M.D.

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 Lightbody, Charles H. (FP) No. Main St., Guilford 04443
 Nelson, Isaac (FP) Box 506, Greenville 04441
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 Rodriguez, Araminta M. (FP) Milo 04463
 Stitham, Linus J. (FP,OBG) 50 Main St., Dover-Foxcroft 04426
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 Dow, John P. (FP) Grove Hill, Pittsfield 04967
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 Steeves, John H. (R) Rt. 3, Skowhegan 04976
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 Strickland, Marian L. (FP) Easy St., Canaan 04924
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 Sy, Vincente L. (FP,U) Milford Ave., Bingham 04920
 Taylor, Richard C. (PATH) Redington-Fairview Gen. Hosp., Skowhegan 04976
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WALDO COUNTY

President — John A. Caswell, M.D.

Secretary-Treasurer — Andrew J. Gay, M.D.

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SENIOR

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AFFILIATE

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WASHINGTON COUNTY

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Secretary-Treasurer — Karl V. Larson, M.D.

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 Chinichian, Ali (R) Calais Regional Hosp., Calais 04619
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AFFILIATE

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YORK COUNTY

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Secretary-Treasurer — Melvin Bacon, M.D.

ACTIVE

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LaFond, Robert S. (IM)	258 Main St., Saco	04072
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Lapirow, Harry (IM)	99 Main St., Kennebunk	04043
Leigh, Kenneth E. (R)	Brixham Rd., York	03909
Leonard, John H. (R)	South Side Rd., York	03909
Lincourt, Armand S. (FP)	122 Main St., Sanford	04073
Lord, George A. (GS)	27 June St., Sanford	04073
Magaudda, Michael M. P. (FP,GS)	39 Old Orchard St., Old Orchard Beach	04064
Magocsi, Alexander W. (FP)	York	03909
McCall, Ronald E. (IM)	10 Winter St., Sanford	04073
Moore, Conner M. (PD)	372 Main St., Saco	04072
Moulton, Marion K. (FP)	W. Newfield	04095
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Peterlein, Walter R., Jr. (FP)	75 Main St., Springvale	04083

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Richards, Carl E. (FP)	27 June St., Sanford	04073
Robert, Roger J. P. (ORS)	258 Main St., Saco	04072
Rosenfeld, Michael (IM)	Nubble Rd., York Beach	03910
Ross, Maurice (PD)	372 Main St., Saco	04072
Scott, Arthur M., Jr. (IM,CD)	37 Amherst St., Biddeford	04005
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HONORARY

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SENIOR

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AFFILIATE

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An Alphabetical List of the Members of the Maine Medical Association

The figures in parentheses refer to County Societies as follows: (1) Androscoggin, (2) Aroostook, (3) Cumberland, (4) Franklin, (5) Hancock, (6) Kennebec, (7) Knox, (8) Lincoln-Sagadahoc, (9) Oxford, (10) Penobscot, (11) Piscataquis, (12) Somerset, (13) Waldo, (14) Washington, (15) York.

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 Barron, Richard E., Western Ave., Winthrop 04364 (6)
 Bates, James C., Eastport 04631 (14)
 Bean, Achsa M., Star Route 32, Owl's Head 04854 (7)
 Bean, H. Richard, 121 Main St., Norway 04268 (9)
 Beckerman, Stanley C., 175 Silver St., Waterville 04901 (6)
 Beaker, Vincent H., 85 Wood St., Lewiston 04240 (1)
 Beebe, David S., 454 State St., Bangor 04401 (6)
 Beegel, Paul M., 10 High St., Lewiston 04240 (1)
 Begenau, Vernon G., Post Rd., Wells 04090 (15)
 Beliveau, Bertrand A., 56 Howe St., Lewiston 04240 (1)
 Belknap, Samuel L., Damariscotta 04543 (8)
 Belleau, Thomas, 43 Illinois Ave., Bangor 04401 (10)
 Beliveau, Donald G., Box 664, Biddeford 04005 (15)
 Belmont, Ralph S., 6 Washington St., Sanford 04073 (15)
 Bennert, Harry W., Jr., 7 Bramhall St., Portland 04102 (3)
 Bennet, DaCosta F., 4 Main St., Lubec 04652 (14)
 Bennet, Eben T., 49 Deering St., Portland 04101 (3)
 Bennett, Ralph G., Jr., 325B Kennedy Mem. Dr., Waterville 04901 (6)
 Bensen, Pamela P., St. Mary's Gen. Hosp., Lewiston 04240 (1)
 Berger, Steven, Station B, Poughkeepsie, N. Y. 12602 (15)
 Berkovitch, Sumner, 229 Vaughan St., Portland 04102 (3)
 Bettie, Ronald A., Parkview Professional Bldg., Brunswick 04011 (3)
 Betts, Anthony, Thayer Hospital, Waterville 04901 (6)
 Bhatnagar, Hemendra N., 67 Silver St., Waterville 04901 (6)
 Bidwell, Robinson L., 31 Bramhall St., Portland 04102 (3)
 Binette, Germain A., Webster Hosp., Biddeford 04005 (3)
 Bischoffberger, John M., Naples 04055 (3)
 Bittermann, Donald E., 1168 Westbrook St., Portland 04102 (3)
 Bjorn, John C., Hampden Highlands 04445 (10)
 Blackburn, Nelson P., Bath Memorial Hosp., Bath 04530 (8)
 Blackwell, William M., Millinocket Com. Hosp., Millinocket 04462 (10)
 Blaisdell, Carl E., 336 Mt. Hope Ave., Bangor 04401 (10)
 Blaisdell, Elton R., 233 Vaughan St., Portland 04102 (3)
 Blaisdell, William B., 209 State St., Bangor 04401 (10)
 Bliss, Harry A., 39 Deering St., Portland 04101 (3)
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 Blumenstein, Harold L., Hill House, Cutler Lane, Farmington 04938 (4)
 Bolduc, Jean L., 325 Kennedy Dr., Waterville 04901 (6)
 Bonney, James H., 53 Chadwick St., Portland 04102 (3)
 Boone, Alan W., 111 State St., Bangor 04401 (10)
 Boone, Storer W., 54 Third Ave., Presque Isle 04769 (2)
 Bostwick, George W., Box 388, Newcastle 04553 (8)
 Bourassa, Harvey J., 47 Elm St., Waterville 04901 (6)
 Bouton, Dale C., 157B Broadway, Bangor 04401 (10)
 Bove, Louis G., 233 Vaughan St., Portland 04102 (3)
 Bowman, Peter W., 56 Baribeau Dr., Brunswick 04011 (3)
 Bowne, Hays G., Strong 04983 (4)
 Boyd, Marjorie A., 19 Bramhall St., Portland 04102 (3)
 Bradbury, Francis W., 16 E. Main St., Dover-Foxcroft 04426 (11)
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 Branch, Charles F., 69 Gamage Ave., Auburn 04210 (1)
 Brann, Henry A., 31 Western Ave., Augusta 04330 (6)
 Branson, Sidney R., 37 Main St., South Windham 04082 (3)
 Briggs, Paul R., Hartland 04943 (12)
 Briggs, Russell C., Maine Medical Ctr., Portland 04102 (3)
 Briggs, Winton, 155 Spurwink Ave., Cape Elizabeth 04107 (3)
 Brinkman, Carl A., 52 Gilman St., Portland 04102 (3)
 Brinkman, Harry, 47 Perham St., Farmington 04938 (4)
 Brinkman, Paul A., Farmington 04938 (4)
 Britt, Richard W., Blue Hill 04614 (5)
 Britt, Robert C., 108 Elm St., Camden 04843 (7)
 Britton, Richard C., Maine Medical Ctr., Portland 04102 (3)
 Brito, Joseph S., 255 Hammond St., Bangor 04401 (10)
 Bromley, William C., State St., Ellsworth 04605 (5)
 Brouwer, Johan, 5 Beech St., Rockland 04841 (7)
 Brown, Donald H., 19 Bramhall St., Portland 04102 (3)
 Brown, Douglas H., 1 Birchwood Rd., Cape Elizabeth 04107 (3)
 Brown, Eugene E., 57 Summit Ave., Bangor 04401 (10)
 Brown, Lloyd, 186 State St., Bangor 04401 (10)
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 Brown, Stephen S., Mars Hill 04758 (2)
 Brownlow, Bradley E., Blue Hill Mem. Hosp., Blue Hill 04614 (5)
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 Buell, William O., 357 Elm St., Biddeford 04005 (15)
 Bull, Frank B., 5 Hasson St., Hallowell 04347 (6)
 Bullington, Sunny J., 56 Baribeau Dr., Brunswick 04011 (3)
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 Bunker, Willard H., York Harbor 03911 (15)
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 Burdick, Robert L., St. Joseph Hosp., Bangor 04401 (10)
 Burger, Charles S., Hampden Highlands 04445 (10)
 Burke, John N., 144 State St., Portland 04101 (3)
 Burke, Paul W., 5 High St., Newport 04953 (10)
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 Burnham, Harold N., 130 Main St., Gorham 04038 (3)
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 Busch, John J., 105 Elm St., Mechanic Falls 04256 (1)
 Butterfield, Wilfred L., 119 Main St., Lincoln 04457 (10)
 Cabatingan, Oscar S., 10 High St., Lewiston 04240 (1)
 Cabelin, Miguelito A., 10 High St., Lewiston 04240 (1)
 Caldwell, Edgar J., Maine Medical Ctr., Portland 04102 (3)
 Callahan, Robert L., 12 Spruce St., Augusta 04330 (6)
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 Carrier, John W., Central Maine Gen. Hosp., Lewiston 04240 (1)
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 Chan, William G., State Rd., Van Buren 04785 (2)
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 Charest, Leandre R., 314 Alfred St., Biddeford 04005 (15)
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 Chatterjee, Manu, 295 Water St., Augusta 04330 (3)
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 Cheng, Hsueh-ching, 12 Spruce St., Augusta 04330 (6)
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 Clapp, Waldo A., 215 College St., Lewiston 04240 (1)
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 Clark, William E., Jr., 263 State St., Bangor 04401 (10)
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 Colley, Maynard B., 14 Main St., Farmington 04938 (4)
 Collins, Arthur C., 49 Main St., Machias 04654 (14)
 Collins, H. Douglas, 504 Main St., Caribou 04736 (2)
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 Contartese, Michael, 149 Main St., Freeport 04032 (3)
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 Cummings, George O., Sr., 47 Deering St., Portland 04101 (3)
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 Cuneo, Kenneth J., 31 Summer St., Kennebunk 04043 (15)
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 Davidson, Gisela K., 10 Chadwick St., Portland 04102 (3)
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 Davis, George E., 111 Webster St., Lewiston 04240 (1)
 Davis, Paul V., 530 Pinehurst Dr., Springhill, Fla. 33512 (3)
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 Derboven, Paul H., 120 Main St., Sanford 04073 (15)
 DeCosta, Donald A., Poland Spring 04274 (1)
 de Freitas, Andre M., 19 Cushnoe Dr., Augusta 04330 (6)
 DeGrinney, Joseph T., RHA, Rt. 133, Jay 04239 (4)
 Dela Cruz, Teodoro C., 18 Spruce St., Augusta 04330 (6)
 Delaney, Frederick G., 130 Main St., Gorham 04038 (3)
 Deming, Howard R., Maine Medical Ctr., Portland 04102 (3)
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 Dennis, Richard H., 325A Kennedy Dr., Waterville 04901 (6)
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 Dixon, Robert H., 6 Oak Grove Ave., Bath 04530 (8)
 Dixon, Walter G., 16 Deering St., Norway 04268 (9)
 Doble, Miriam, 990 Washington St., Bath 04530 (8)
 Doby, Tibor, Mercy Hosp., Portland 04101 (3)
 Doil, Kenneth L., 7 Bramhall St., Portland 04102 (3)
 Dole, Richard R., 325 Kennedy Dr., Waterville 04901 (6)
 Dominici, Raymond H., 56 Baribeau Dr., Brunswick 04011 (8)
 Donahue, Clement L., 279 So. Main St., Caribou 04736 (2)
 Dore, Clarence E., 2 School St., Waterville 04901 (6)
 Dore, Kenneth E., 153A Main St., Fryeburg 04037 (3)
 Dorfman, Irvin, Goodall Hosp., Sanford 04073 (15)
 Dorogi, Louis V., Old Post Rd., Rt. 138, Bowdoinham 04008 (8)
 Dougherty, John F., 112 Front St., Bath 04530 (8)
 Doupinett, Otis J., 763 Congress St., Portland 04102 (3)
 Dow, John P., Grove Hill, Pittsfield 04967 (12)
 Dow, Owen O., Box 388, Longwood Dr., Kennebunk 04043 (15)
 Dow, Richard W., Box 377, York 03909 (15)
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 Drake, Emerson H., 19 Bramhall St., Portland 04102 (3)
 Dreher, Robert J., 11 Maple St., Rockland 04841 (7)
 Drummond, S. Dunton, Bar Mills 04004 (15)
 Duffey, Richard V., 57 Washington St., Bangor 04401 (10)
 Duffy, Wallace H., 100 Main St., Farmington 04938 (4)
 DuMais, Alcid F., 73 High St., South Paris 04281 (9)
 Dumdey, Paul H., 6 Oak Grove Ave., Bath 04530 (3)
 Dunham, Marguerite C., R.F.D. No. 1, Dresden 04342 (2)
 Dunn, Robert H., 105 Dresden Ave., Gardiner 04345 (6)
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 Eastman, Harvey W., Box 188, Livermore Falls 04254 (4)
 Eastman, H. Wilson, 15 Millett St., Livermore Falls 04254 (4)
 Eddy, Robert H., 5 Beech St., Rockland 04841 (7)
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 Elsemore, Dexter E., 11 Main St., Dixfield 04224 (9)
 Emanuel, Meyer, Veterans Adm., Togus 04330 (6)
 Emerson, W. Merritt, 131 State St., Bangor 04401 (10)
 Emery, Frederick C., 242 Cedar St., Bangor 04401 (10)
 Emmett, Peter A., 489 State St., Bangor 04401 (10)
 Endicott, Ruth E., Grasshopper Lane, Ogunquit 03907 (15)
 English, Wesley J., 18 Bramhall St., Portland 04102 (3)
 Ervin, Edmund N., 2 School St., Waterville 04901 (6)
 Evans, Peter A., 65 Baribeau Dr., Brunswick 04011 (8)
 Evans, Richard, III, 56 Baribeau Dr., Brunswick 04011 (8)
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 Festino, Michael J., 258 Main St., Saco 04072 (15)
 Fichtner, Paul A., 10 Oak Grove Ave., Bath 04530 (8)
 Ficker, Robert F., Maine St., Kennebunkport 04046 (15)
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 Finks, Henry B., 22 Lunt Rd., Falmouth 04105 (3)

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 Fite, Marcia, Pemaquid Point 04558 (8)
 Flanders, Merton N., 1 High St., Lewiston 04240 (1)
 Floyd, Paul E., 2 Middle St., Farmington 04938 (4)
 Fogg, C. Eugene, Peaks Island 04108 (3)
 Fortier, Andre P., 68 Foss St., Biddeford 04005 (15)
 Fortier, Paul J., 111 Webster St., Lewiston 04240 (1)
 Fournier, Rino Y., 380 Main St., Madawaska 04756 (2)
 Fox, Francis H., 83 West St., Portland 04102 (3)
 Foy, I. Howard, Arthur R. Gould Mem. Hosp., Presque Isle 04769 (2)
 Freeman, William E., 107 Main St., Yarmouth 04096 (3)
 French, Rowland B., 16 Water St., Eastport 04631 (14)
 Frigault, Emile J., Main St., Dixfield 04224 (9)
 Frost, Robert A., 93 Summer St., Auburn 04210 (1)
 Fuller, Barbara L., 20 Chestnut St., Rockland 04841 (7)
 Fuller, George G., 50 Union St., Ellsworth 04605 (5)
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 Rodriguez, Araminta M., Milo 04463 (11)
 Rodriguez, Jose M., 325 Kennedy Dr., Waterville 04901 (6)
 Rogers, Albert M., 48 Gilman St., Portland 04102 (3)
 Rohm, Walter, Augusta State Hosp., Augusta 04330 (6)
 Root, John A., 22 White St., Rockland 04841 (7)
 Rosenblatt, Stanley D., 480 Main St., Lewiston 04240 (1)
 Rosenfeld, Michael, Nubble Rd., York Beach 03910 (15)
 Ross, Maurice, 372 Main St., Saco 04072 (15)
 Roussin, William T., 48 Bacon St., Biddeford 04005 (15)
 Rowan, Gilbert R., 10 Oak Grove Ave., Bath 04530 (8)
 Rowe, Linwood M., Rumford Com. Hosp., Rumford 04276 (9)
 Royal, Albert P., Jr., 82 Maine Ave., Rumford 04276 (9)
 Rubins, Nina B., E. A. Center Mem. Clinic, Steep Falls 04085 (3)
 Rubins, Talivaldis, E. A. Center Mem. Clinic, Steep Falls 04085 (3)
 Russell, Daniel F. D., Leeds 04263 (1)
 Russell, Robert F., Castine 04421 (5)
 Russell, Theodore M., Doctors Park, 89 Hospital St., Augusta 04330 (6)
 Rynne, Michael V., 191 Lincoln Ave., Rumford 04276 (9)

Sager, George F., 7 Bramhall St., Portland 04102 (3)
 Salvo, Anthony F., 25 Woodfield Rd., Portland 04102 (3)
 Samuelsen, Thomas W., 20 Eastfield Rd., Cape Elizabeth 04107 (10)
 Sandvoss, Herman G., Union St., Kennebunkport 04046 (15)
 Sanfacon, Philip G., Middle Rd., Colchester, Vt. 05446 (2)
 Sanford, Theodore H., (P.A.), 97 Campus Ave., Lewiston 04240 (1)
 Sangalang, Manuel G., 20 Novella St., Lewiston 04240 (1)
 Santoro, Domenico A., 43 Deering St., Portland 04101 (3)
 Sanzenbacher, Karl E., 325C Kennedy Mem. Dr., Waterville 04901 (6)
 Satir, Ahmet, Box 682, Augusta 04330 (6)
 Saunders, Allen I., River Rd., R.F.D. 2, Augusta 04330 (6)
 Saunders, Norman W., 233 Vaughan St., Portland 04102 (3)
 Saunders, Sallie H., R.F.D., Camden 04843 (7)
 Sawyer, Howard P., Jr., 22 Bramhall St., Portland 04102 (3)
 Sbaschnig, Robert J., Central Maine Gen. Hosp., Lewiston 04240 (1)
 Schall, David W., 56 Baribeau Dr., Brunswick 04011 (8)
 Schmidt, Lorrimer M., 13 Elm St., Augusta 04330 (6)
 Schnittke, Sidney M., Porter Ave., W., Rumford 04276 (9)
 Schroder, John C., 205 French St., Bangor 04401 (10)
 Schumacher, William E., 14 Westwood Rd., MD "B", Augusta 04330 (6)
 Schwarz, Harald J., Seton Hospital, Waterville 04901 (6)
 Scolten, Adrian H., 32 Deering St., Portland 04101 (3)
 Scott, Arthur M., Jr., 37 Amherst St., Biddeford 04005 (15)
 Sears, Harold G., Second Ave., Woodland 04694 (14)
 Seligman, Morris J., Veterans Adm., Togus 04330 (6)
 Selva, Irving L., Jr., 22 Bramhall St., Portland 04102 (3)
 Senenky, Joseph P., Augusta State Hosp., Augusta 04330 (6)
 Sensenig, David M., 431 State St., Bangor 04401 (10)
 Serrage, Elizabeth G., 87A Ocean St., Portland 04106 (3)
 Serrage, John C., 229 Vaughan St., Portland 04102 (3)
 Sewall, Elmer M., 14 Park St., Orono 04473 (10)
 Sewall, Kenneth W., 2 School St., Waterville 04901 (6)
 Shapero, Benjamin L., 431 State St., Bangor 04401 (10)
 Shapiro, Morrill, 7 Bramhall St., Portland 04102 (3)
 Shaw, G. Patrick, 275 Main St., Biddeford 04005 (15)
 Shaw, George B., 27 Broadway, Machias 04654 (14)
 Shaw, John H., 131 Sewall St., Augusta 04330 (6)
 Sheehan, Terrance J., Doctors Park, 89 Hospital St., Augusta 04330 (6)
 Shelton, M. Tische, 21 Western Ave., Augusta 04330 (6)
 Shelton, Robert L., 21 Western Ave., Augusta 04330 (6)
 Shems, Albert, 313 Main St., Lewiston 04240 (1)
 Sherman, Fuller G., Spruce Pt., Boothbay Harbor 04538 (8)
 Shields, Daniel R., 10 High St., Lewiston 04240 (1)
 Shields, Thomas F., 416 Sabattus St., Lewiston 04240 (1)
 Shrier, Peter R., 87 Limerock St., Rockland 04841 (7)
 Shubert, Alice J., 125 Leighton St., Bangor 04401 (10)
 Shubert, William M., 336 Mt. Hope Ave., Bangor 04401 (10)
 Shurman, Hans, 10 Spring St., Dexter 04930 (10)
 Siddiqui, Saleem A., 373 Main St., Caribou 04736 (2)
 Sidwell-Thompson, Doris M., R.F.D. Whittier Rd., W. Ossipee, N. H. 03890 (3)
 Sieling, Walter H., Jr., 4 San Soucie Dr., Stuart, Fla. 33494 (8)
 Sigafos, J. Harvey, Pleasant Point 04563 (7)
 Silver, Randall H., Maine Coast Mem. Hosp., Ellsworth 04605 (5)

Simon, Pedro T., 373 Main St., Caribou 04736 (2)
 Simpson, Margaret R., 2 Sea Barn Rd., Cape Elizabeth 04107 (6)
 Skillin, Charles E., 111 Westcott Rd., South Portland 04106 (3)
 Sleeper, Francis H., 3 Colony Rd., Augusta 04330 (6)
 Small, Foster C., 169 High St., Belfast 04915 (13)
 Smith, Carroll H., Box 785, Presque Isle 04769 (2)
 Smith, Christopher S., Box 232, Farmington 04938 (4)
 Smith, Edgar J., 1 Park St., Fairfield 04937 (12)
 Smith, Gerald R., Box 237, Naples 04055 (15)
 Smith, Hugh A., Eastern Maine Med. Ctr., Bangor 04401 (10)
 Smith, Jacob, 709 High St., Bath 04530 (8)
 Smith, James O., 118 Front St., Bath 04530 (8)
 Smith, Kenneth E., Veterans Adm., Togus 04330 (6)
 Smith, Marshall E., Pratt Rd., Caribou 04736 (2)
 Smith, Oney P., Post Rd., Wells 04090 (15)
 Sodhi, Harbans S., Stephens Mem. Hosp., Norway 04268 (9)
 Sokol, Stephen A., 10 High St., Lewiston 04240 (1)
 Somerville, Robert B., 45 Hillside St., Presque Isle 04769 (2)
 Sommer, Robert G., 7 Bramhall St., Portland 04102 (3)
 Soreff, Stephen M., Maine Medical Ctr., Portland 04102 (3)
 Southall, Rogers C., 157 Pine St., Portland 04102 (3)
 Sowles, Horace K., 413 Blackstrap Rd., Falmouth 04105 (3)
 Spear, William, R.F.D. No. 2, Sabattus 04280 (1)
 Stanhope, Charles N., South St., Dover-Foxcroft 04426 (11)
 Starks, Pauline G., Pemaquid Point 04561 (8)
 Steele, Charles W., 472 Main St., Lewiston 04240 (1)
 Steeves, John H., Rt. 3, Skowhegan 04976 (12)
 Stein, Ernest W., 72 Main St., Pittsfield 04967 (12)
 Stephenson, Richard B., Bldg. 1, Rm. 118, National Institutes of Health, Bethesda, Md. 20014 (3)
 Stevens, Carl H., R. 2, Box 100, Lincolnville 04849 (13)
 Stevens, Harold W., 369 Ferry Rd., Saco 04072 (15)
 Stevens, Theodore M., 148 State St., Portland 04101 (3)
 Stewart, Nancy H., Hancock St., Bar Harbor 04609 (5)
 Stewart, Winston G., Hancock St., Bar Harbor 04609 (5)
 Stimson, Barbara B., Star Route 22-282, Owl's Head 04854 (7)
 Stinchfield, Allan J., Box 343, Augusta 04330 (6)
 Stitham, Linus J., 50 Main St., Dover-Foxcroft 04426 (11)
 Stocks, Joseph F., 22 Bramhall St., Portland 04102 (3)
 Stone, Bryan, 21 Church St., Calais 04619 (14)
 Stone, Charles H., III, Box 498, Greenville 04441 (11)
 Stong, Frederick V., Parkview Professional Bldg., Brunswick 04011 (8)
 Storer, Daniel P., 108 Fessenden St., Portland 04103 (3)
 Stott, Nelson W., County Rd., Eastport 04631 (14)
 Strach, Toffield B. J., 3 Deering St., Portland 04101 (3)
 Strauss, William T., Box 547, Brunswick 04011 (3)
 Striar, Ronald R., 94 Essex St., Bangor 04401 (10)
 Strickland, Marian L., Easy St., Canaan 04924 (12)
 Stroud, Geoffrey A., 65 Baribeau Dr., Brunswick 04011 (3)
 Strout, Warren G., 83 Essex St., Bangor 04401 (10)
 Stucki, Paul, 325 Kennedy Dr., Waterville 04901 (6)
 Sturtevant, Vaughn R., 325 Kennedy Dr., Waterville 04901 (6)
 Sube, Janis, 108 Elm St., Camden 04843 (7)
 Sullivan, George E., 86 Summer St., Waterville 04901 (12)
 Sundaram, Venkat R., 87A Fish St., Turner 04282 (1)
 Suyama, Eji, 58 W. Main St., Ellsworth 04605 (5)
 Swanson, Ronald A., Regional Mem. Hosp., Brunswick 04011 (8)
 Sweatt, Linwood A., 48 Drummond St., Auburn 04210 (1)
 Swengel, Richard M., 477 Main St., Lewiston 04240 (1)
 Swett, Alfred E., 20 Parsons Rd., Portland 04103 (3)
 Swett, Carlton E., Box 526, Skowhegan 04976 (12)
 Swett, Clyde I., 18 Sherman St., Island Falls 04747 (2)
 Sy, Vincente L., Milford Ave., Bingham 04920 (12)
 Sylvester, Stanley B., Box 548, Portland 04112 (3)
 Szelenyi, Ernest, Box C, Pownal 04069 (3)
 Szucs, Murrill M., Jr., 14 Gilman St., Waterville 04901 (6)

Tabachnick, Henry M., 110 Park Ave., Portland 04101 (3)
 Tai, Tse-Wu, RFD No. 1, South Rumford 04276 (9)
 Takach, Robert J., 325A Kennedy Dr., Waterville 04901 (6)
 Tao, Zui S., Main St., Fort Kent 04743 (2)
 Tardif, Lionel R., 9 Campus Ave., Lewiston 04240 (1)
 Tardiachis, Louis N., R.F.D. No. 1, West Buxton 04093 (3)
 Taylor, H. Lewis, 33 Church St., Dexter 04930 (10)
 Taylor, Paul E., 9 Wentworth St., Kittery 03904 (15)
 Taylor, Richard C., Redington-Fairview Gen. Hosp., Skowhegan 04976 (12)
 Taylor, Richard W., St. Mary's Gen. Hosp., Lewiston 04240 (1)
 Taylor, William C., 7 Michelangelo St., Latham, N.Y. 12110 (3)
 Taylor, William F., 134 U.S. Route 1, Falmouth 04105 (3)
 Tchao, Jou S., 181 Russell St., Lewiston 04240 (1)
 Telfeian, Alphonse, 321 Brackett St., Portland 04102 (3)
 Temple, George L., Fahey St., Belfast 04915 (13)
 Tetreau, William J., 111 Westcott Rd., South Portland 04106 (3)
 Thacher, Henry C., 2940 Fillmore St., Apt. 3, San Francisco, Calif. 94109 (1)
 Thegen, W. Edward, Elm St., Bucksport 04416 (5)
 Thomas, Philip B., 83 Essex St., Bangor 04401 (10)

Thompson, Philip P., Jr., 131 Chadwick St., Portland 04102 (3)
 Thurber, Charles F., Maine Medical Ctr., Portland 04102 (3)
 Tibbetts, Otis B., 181 Gamage Ave., Auburn 04210 (1)
 Tibbetts, Otis P., Central Maine Gen. Hosp., Lewiston 04240 (1)
 Timothy, Robert P., 229 Vaughan St., Portland 04102 (3)
 Tiongson, Antonio C., 29 Malo St., Lewiston 04240 (1)
 Tiongson, Cornelia M., 185 Webster St., Lewiston 04240 (1)
 Titherington, John B., Shore Rd., Bremen 04551 (3)
 Tobin, H. Wayne, Thayer Hospital, Waterville 04901 (6)
 Torrey, Raymond L., R.F.D. No. 1, Belfast 04915 (13)
 Tounge, Harry G., Jr., 12 Union St., Camden 04843 (7)
 Tousignant, Camille, 111 Pine St., Lewiston 04240 (1)
 Toussaint, Leonid G., Box 9, Fort Kent 04743 (2)
 Towne, Charles E., 18 Common St., Waterville 04901 (6)
 Towne, John W., 325C Kennedy Mem. Dr., Waterville 04901 (6)
 Tracy, Mary J., 1123 Paseo Barranca, Sante Fe, New Mexico 87501 (8)
 Trask, Henry M., 24 Hersey St., Portland 04103 (3)
 Trembly, Bruce, 325 Kennedy Dr., Waterville 04901 (6)
 Trowbridge, Mason, Jr., 77 Broadway, Bangor 04401 (10)
 Tsao, Wu-Ming, Veterans Adm., Togus 04330 (6)
 Turcotte, Guy N., 7 Bramhall St., Portland 04102 (3)
 Turcotte, Richard W., 95 Campus Ave., Lewiston 04240 (1)
 Turgeon, Raphael F., 367 Main St., Westbrook 04092 (3)
 Turnbull, Elliott D., Elm House, Naples 04055 (3)
 Turner, Fennell P., Veterans Adm. Ctr., Togus 04330 (6)
 Turner, Harland G., Box 38, Norridgewock 04957 (12)
 Turville, Charles S., Box E, Alfred 04002 (15)
 Twadelle, Frank W., 345 Water St., Gardiner 04345 (6)
 Tyler, J. Wayne, 222 Pine St., Lewiston 04240 (1)
 Tyson, Dudley B., 91 Grove St., Bangor 04401 (10)

Uldall, Stella L., Augusta State Hosp., Augusta 04330 (6)
 Urjanis, Janis, 710 Cannons Lane, Louisville, Ky. 40206 (3)

Vachon, Robert D., 34 Winter St., Sanford 04073 (15)
 Van Deventer, Wilhelm H. J.,
 R.F.D. 1, Mere Point Rd., Brunswick 04011 (3)
 Van Lonkhuyzen, Maurice, 131 State St., Portland 04101 (3)
 Van Pelt, John C., 50 Union St., Ellsworth 04605 (5)
 Veilleux, Lucien F., 325 Kennedy Dr., Waterville 04901 (6)
 Vickers, Martyn A., 268 State St., Bangor 04401 (10)
 Viger, Leopold A., 10 Amherst St., Biddeford 04005 (15)
 Viglotti, Joseph F., Tamarack Country House,
 Hedding Rd., Eppinger, N. H. 03042 (12)
 Vigue, Robert W., 122 Main St., Sanford 04073 (15)
 Viles, Wallace E., Turner 04282 (1)
 Villandry, Philip J., 22 Bramhall St., Portland 04102 (3)
 Vincze, Imre E., 336 Mt. Hope Ave., Bangor 04401 (10)
 Voss, Carlyle B., 22 Bramhall St., Portland 04102 (3)
 Vydas, Joseph, Bangor State Hosp., Bangor 04401 (10)

Wadsworth, Richard C., 489 State St., Bangor 04401 (10)
 Wagner, Samuel L., 2 Holmes St., Winterport 04496 (10)
 Wakana, Minoru, 33 Lyndon St., Caribou 04736 (2)
 Wakefield, Robert D., St. Mary's Hosp., Lewiston 04240 (1)
 Walker, Douglass W., Maine Medical Ctr., Portland 04102 (3)
 Walsh, Andrew C., 144 State St., Portland 04101 (3)
 Ward, John V., 8 Waites Landing Rd., Falmouth Foreside 04105 (3)
 Ward, William W., Box 646, Rockland 04841 (7)
 Ware, Roland G., Jr., 22 Bramhall St., Portland 04102 (3)
 Warren, Henry S., Derby Rd., Islesboro 04848 (7)
 Wasgatt, Wesley N., 41 Talbot Ave., Rockland 04841 (7)

Watanabe, Tatsuo, 325 Kennedy Mem. Dr., Waterville 04901 (6)
 Waterman, Dorothy, Waldoboro 04572 (7)
 Waterman, Richard, Waldoboro 04572 (7)
 Watt, Thomas L., 316 State St., Bangor 04401 (10)
 Weaver, Michael L., 10 Water St., Brunswick 04011 (3)
 Webber, Isaac M., 29 Deering St., Portland 04101 (3)
 Webber, John R., 6 Northport Ave., Belfast 04915 (13)
 Webber, Peter B., 233 Vaughan St., Portland 04102 (3)
 Webber, Wedgwood P., 460 Main St., Lewiston 04240 (1)
 Weisz, Hans, 17 Sunrise Ter., Orono 04473 (10)
 Wheelwright, Henry J., Augusta Gen. Hosp., Augusta 04330 (6)
 White, Chester W., Jr., 22 Bramhall St., Portland 04102 (3)
 White, Henry O., 22 White St., Rockland 04841 (7)
 White, Leland M., 18 Pleasant St., Caribou 04736 (2)
 White, Richard L., 7 Bramhall St., Portland 04102 (3)
 White, William J., 1 Mitchell Rd., South Portland 04106 (3)
 Whitney, Philip G., 233 Vaughan St., Portland 04102 (3)
 Whittier, Alice A. S., 143 Neal St., Portland 04102 (3)
 Wickenden, John W., 22 White St., Rockland 04841 (7)
 Wight, Donald G., 30 Mitchell Rd., South Portland 04106 (3)
 Wilbur, Herbert T., Jr., 100 Main St., Southwest Harbor 04679 (5)
 Wilder, William D., Box 2146, Augusta 04330 (6)
 Wilkis, Joseph L., 7 Bramhall St., Portland 04102 (3)
 Wilson, Donald W., 52 Gilman St., Portland 04102 (3)
 Williams, Edward P., 72 Main St., Houlton 04730 (2)
 Williams, James A., 39 Pleasant St., Mechanic Falls 04256 (1)
 Williams, Thomas W., 22 White St., Rockland 04841 (7)
 Williamson, Elizabeth E., Blue Hill 04614 (5)
 Williamson, Russell G., Blue Hill Mem. Hosp., Blue Hill 04614 (5)
 Wilson, G. Ivan, 48 Court St., Houlton 04730 (2)
 Wilson, Robert D., Mt. Desert Island Hosp., Bar Harbor 04609 (5)
 Wilson, Robert W., Box 962, Jefferson 04348 (6)
 Wilson, William S., 111 State St., Bangor 04401 (10)
 Winchenbach, Francis A., 910 Washington St., Bath 04530 (8)
 Winkelbauer, Rudolf G., 62 Baribeau Dr., Brunswick 04011 (3)
 Wise, Joe R., Jr., 1 Fern St., Bangor 04401 (10)
 Wolf, Kenneth P., 181 Russell St., Lewiston 04240 (1)
 Wood, George W., III, 156 North Main St., Brewer 04412 (10)
 Woodcock, Allan, 109 State St., Bangor 04401 (10)
 Woodcock, John A., 109 State St., Bangor 04401 (10)
 Woodruff, Alan F., 16 Summer St., Rockland 04841 (7)
 Worthing, Verla E., Box A., Thomaston 04861 (7)
 Wren, James C., Veterans Adm. Ctr., Togus 04330 (6)
 Wright, Herbert J. Jr., 45 Golder St., Lewiston 04240 (1)
 Wyman, David S., 233 Vaughan St., Portland 04102 (3)
 Wyman, Edwin T., Harvard Club of Boston, 374 Commonwealth Ave.,
 Boston, Mass. 02215

Yaghmai, Madjid, Cary Mem. Hosp., Caribou 04736 (2)
 Yap, Victor, 18 Garden Circle, Caribou 04736 (2)
 York, Elihu, 62 Baribeau Dr., Brunswick 04011 (8)
 Young, E. Stanley, Poland Spring 04274 (1)
 Young, John, Paradise Rd., Bethel 04217 (9)
 Young, William J., Mercy Hosp., Portland 04101 (3)

Zanca, Ralph, 185 Webster St., Lewiston 04240 (1)
 Zeller, Alan W., P.O. Box 383, Newcastle 04553 (8)
 Zerner, John, 49 Deering St., Portland 04101 (3)
 Zolov, Benjamin, 296 Congress St., Portland 04101 (3)
 Zorick, Frank J., 43 Illinois Ave., Bangor 04401 (10)

PAST PRESIDENTS

Maine Medical Association

*Isaac Lincoln, M.D., Brunswick	April-June, 1853	*Erastus E. Holt, M.D., Portland	1915-1916
*James McKeen, M.D., Topsham	1853-1854	*W. F. Hart, M.D., Camden	1916-1917
*Charles Millett, M.D., Lewiston	1854-1855	*James A. Spalding, M.D., Portland	1917-1918
*Joseph H. Estabrook, M.D., Camden	1855-1856	*George H. Coombs, M.D., Waldoboro	1918-1919
*Hosea Rich, M.D., Bangor	1856-1857	*H. B. Mason, M.D., Calais	1919-1920
*Gilman Daveis, M.D., Portland	1857-1858	*Theodore E. Hardy, M.D., Waterville	1920-1921
*J. C. Bradbury, M.D., Old Town	1858-1859	*Addison S. Thayer, M.D., Portland	1921-1922
*H. H. Hill, M.D., Augusta	1859-1860	*L. T. Snipe, M.D., Bath	1922-1923
*T. G. Stockbridge, M.D., Bath	1860-1861	*C. A. Moulton, M.D., Hartland	1923-1924
*H. M. Harlow, M.D., Augusta	1861-1862	*F. W. Mann, M.D., Houlton	1924-1925
*Alonzo Garcelon, M.D., Lewiston	1862-1863	*J. D. Phillips, M.D., Southwest Harbor	1925-1926
*J. T. Gilman, M.D., Portland	1863-1864	*L. P. Gerrish, M.D., Lisbon Falls	1926-1927
*N. P. Monroe, M.D., Belfast	1864-1865	*Herbert F. Twitchell, M.D., Portland	1927-1928
*Amos Nourse, M.D., Bath	1865-1866	*Frank Y. Gilbert, M.D., Portland	1928-1929
*S. H. Tewksbury, M.D., Portland	1866-1867	*Delbert M. Stewart, M.D., South Paris	1929-1930
*Cyrus Briggs, M.D., Augusta	1867-1868	*Charles B. Sylvester, M.D., Portland	1930-1931
*I. T. Dana, M.D., Portland	1868-1869	*Ernest V. Call, M.D., Lewiston	1931-1932
*D. McRuer, M.D., Bangor	1869-1870	*E. Delmont Merrill, M.D., Dover-Foxcroft	1932-1933
*B. F. Buxton, M.D., Warren	1870-1871	*Warren E. Kershner, M.D., Bath	1933-1934
*A. J. Fuller, M.D., Bath	1871-1872	*Edwin W. Gehring, M.D., Portland	1934-1935
*A. P. Snow, M.D., Winthrop	1872-1873	*John L. Johnson, M.D., Bangor	1935-1936
*A. F. Page, M.D., Bucksport	1873-1874	*Frederick T. Hill, M.D., Waterville	1936-1937
*Thomas H. Brown, M.D., Paris	1874-1875	*Ralph W. Wakefield, M.D., Bar Harbor	1937-1938
*J. H. Bates, M.D., Yarmouth	1875-1876	*Willard H. Bunker, M.D., York Harbor	1938-1939
*E. F. Sanger, M.D., Bangor	1876-1877	*George L. Pratt, M.D., Fairfield	1939-1940
*T. H. Jewett, M.D., South Berwick	1877-1878	*Thomas A. Foster, M.D., Portland	1940-1941
*M. C. Wedgwood, M.D., Lewiston	1878-1879	*P. L. B. Ebbett, M.D., Houlton	1941-1942
*S. C. Gordon, M.D., Portland	1879-1880	*Carl H. Stevens, M.D., Belfast	1942-1943
*William Warren Greene, M.D., Portland	1880-1881	*Oscar F. Larson, M.D., Machias	1943-1944
*A. K. P. Meserve, M.D., Buxton	1881-1882	*R. V. N. Bliss, M.D., Blue Hill	1944-1945
*George E. Brickett, M.D., Augusta	1882-1883	*Adam P. Leighton, M.D., Portland	1945-1946
*Oren A. Horr, M.D., Lewiston	1883-1884	*John O. Piper, M.D., Waterville	1946-1947
*Thomas A. Foster, M.D., Portland	1884-1885	*Stephen A. Cobb, M.D., Sanford	1947-1948
*Sumner Loughton, M.D., Bangor	1885-1886	*Forrest B. Ames, M.D., Bangor	1948-1949
*J. B. Walker, M.D., Thomaston	1886-1887	*Ralph A. Goodwin, Sr., M.D., Auburn	1949-1950
*Frederick C. Thayer, M.D., Waterville	1887-1888	*Foster C. Small, M.D., Belfast	1950-1951
*Stephen H. Weeks, M.D., Portland	1888-1889	*C. Harold Jameson, M.D., Rockland	1951-1952
*Benjamin F. Sturgis, M.D., Auburn	1889-1890	*Eugene H. Drake, M.D., Portland	1952-1953
*Samuel B. Hunter, M.D., Machias	1890-1891	*Norman H. Nickerson, M.D., Greenville	1953-1954
*Edwin M. Fuller, M.D., Bath	1891-1892	*Robert W. Belknap, M.D., Damariscotta	
*Alfred Mitchell, M.D., Brunswick	1892-1893	June-August 1954 (Died in Office)	
*John A. Donovan, M.D., Lewiston	1893-1894	*William F. Mahaney, M.D., Saco	1954-1955
*W. P. Giddings, M.D., Gardiner	1894-1895	*Martyn A. Vickers, M.D., Bangor	1955-1956
*Lewis W. Pendleton, M.D., Portland	1895-1896	*Armand Albert, M.D., Van Buren	1956-1957
*D. A. Robinson, M.D., Bangor	1896-1897	*Francis A. Winchenbach, M.D., Bath	1957-1958
*Wallace K. Oakes, M.D., Auburn	1897-1898	*Eugene E. O'Donnell, M.D., Portland	1958-1959
*Charles O. Hunt, M.D., Portland	1898-1899	*Allan Woodcock, M.D., Bangor	1959-1960
*Bigelow T. Sanborn, M.D., Augusta	1899-1900	*Wilson H. McWethy, M.D., Augusta	
*Edward H. Hill, M.D., Lewiston	1900-1901	June 1960-February 1961 (Died in Office)	
*Frederic H. Gerrish, M.D., Portland	1901-1902	*Carl E. Richards, M.D., Sanford	February 1961-June 1961
*Hiram Hunt, M.D., Greenville	1902-1903	*James A. MacDougall, M.D., Rumford	1961-1962
*Augustus S. Thayer, M.D., Portland	1903-1904	*Ralph C. Stuart, M.D., Guilford	1962-1963
*F. L. Dixon, M.D., Lewiston	1904-1905	*Ernest W. Stein, M.D., Pittsfield	1963-1964
*Randall D. Bibber, M.D., Bath	1905-1906	*Thomas A. Martin, M.D., Portland	1964-1965
*C. E. Williams, M.D., Auburn	1906-1907	*John F. Dougherty, M.D., Bath	1965-1966
*B. B. Foster, M.D., Portland	1907-1908	*George E. Sullivan, M.D., Waterville	1966-1967
*Alfred D. Sawyer, M.D., Fort Fairfield	1908-1909	*Paul S. Hill, Jr., M.D., Saco	1967-1968
*Galen M. Woodcock, M.D., Bangor	1909-1910	*Asa C. Adams, M.D., Orono	1968-1969
*E. H. Bennett, M.D., Lubec	1910-1911	*Charles F. Branch, M.D., Auburn	1969-1970
*Stanley P. Warren, M.D., Portland	1911-1912	*Charles R. Glassmire, M.D., Portland	1970-1971
*Ralph H. Marsh, M.D., Guilford	1912-1913	*Linus J. Stitham, M.D., Dover-Foxcroft	1971-1972
*W. C. Peters, M.D., Bangor	1913-1914	*George W. Wood, III, M.D., Brewer	1972-1973
*H. L. Bartlett, M.D., Norway	1914-1915		

*Deceased

Honorary Member
Esther M. Kennard, Gray

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Relief of anxiety and tension occurring alone or accompanying various disease states.

Contraindications: Patients with known hypersensitivity to the drug.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. As with all CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Though physical and psychological dependence have rarely been reported on recommended doses, use caution in administering to addiction-prone individuals or those who might increase dosage; withdrawal symptoms (including convulsions), following discontinuation of the drug and similar to those seen with barbiturates, have been reported. Use of any drug in pregnancy, lactation, or in women of childbearing age requires that its potential benefits be weighed against its possible hazards.

Precautions: In the elderly and debilitated, and in children over six, limit to smallest effective dosage (initially 10 mg or less per day) to preclude ataxia or oversedation, increasing gradually as needed and tolerated. Not recommended in children under six. Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (e.g., excitement, stimulation and acute rage) have been reported in psychiatric patients and hyperactive aggressive children. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

Adverse Reactions: Drowsiness, ataxia and confusion may occur, espe-

cially in the elderly and debilitated. These are reversible in most instances by proper dosage adjustment, but are also occasionally observed at the lower dosage ranges. In a few instances syncope has been reported. Also encountered are isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido—all infrequent and generally controlled with dosage reduction; changes in EEG patterns (low-voltage fast activity) may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice and hepatic dysfunction have been reported occasionally, making periodic blood counts and liver function tests

advisable during protracted therapy.

Usual Daily Dosage: Individualize for maximum beneficial effects. *Oral—Adults:* Mild and moderate anxiety and tension, 5 or 10 mg *t.i.d.* or *q.i.d.*; severe states, 20 or 25 mg *t.i.d.* or *q.i.d.* *Geriatric patients:* 5 mg *b.i.d.* to *q.i.d.* (See Precautions.)

Supplied: Librium® (chlordiazepoxide HCl) *Capsules*, 5 mg, 10 mg and 25 mg—bottles of 100 and 500; *Tel-E-Dose®* packages of 1000. *Libritabs®* (chlordiazepoxide) *Tablets*, 5 mg, 10 mg and 25 mg—bottles of 100 and 500. With respect to clinical activity, capsules and tablets are indistinguishable.

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to help reduce clinically significant anxiety and
thereby help improve patient receptivity

Librium® up to 100 mg daily in
severe anxiety
(chlordiazepoxide HCl)

Please see following page.



Symptom of excessive anxiety:

The patient may have difficulty in accepting medical counsel.

Clinical experience has shown that some unduly anxious patients may tend to deny or minimize their illness and therefore resist seeking

or following medical advice. Through its antianxiety action, adjunctive Librium (chlordiazepoxide HCl) can often calm the emotionally tense pa-

tient, thereby encouraging physician-patient rapport and, on occasion, making it easier for the patient to accept medical counsel.

for relief of excessive anxiety



Librium[®] 10-mg capsules
(chlordiazepoxide HCl)

Please see reverse side
for summary of product information.

MDS

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Predominant
psychoneurotic
anxiety

Associated
depressive
symptoms

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Tension and anxiety states; somatic complaints which are concomitants of emotional factors; psychoneurotic states manifested by tension, anxiety, apprehension, fatigue, depressive symptoms or agitation; symptomatic relief of acute agitation, tremor, delirium tremens and hallucinosis due to acute alcohol withdrawal; adjunctively in skeletal muscle spasm due to reflex spasm to local pathology, spasticity caused by upper motor

neuron disorders, athetosis, stiff-man syndrome, convulsive disorders (not for sole therapy).

Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive dis-

orders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anti-convulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance (convulsions, tremor, abdominal and muscle cramps, vomiting and sweating). Keep addiction-prone individuals under careful

The BactrimTM edge

Each tablet contains 80 mg trimethoprim
and 400 mg sulfamethoxazole.

A high assurance of clinical efficacy

- in cystitis, pyelonephritis and pyelitis diagnosed as chronic
- against susceptible strains of the common urinary tract pathogens, usually *E. coli*, *Klebsiella-Enterobacter*, *Proteus mirabilis*, and, less frequently, indole-positive proteus species.



Before prescribing, please consult complete product information, a summary of which follows:

Indications: Chronic urinary tract infections (primarily pyelonephritis, pyelitis and cystitis) due to susceptible organisms (usually *E. coli*, *Klebsiella-Enterobacter*, *Proteus mirabilis*, and, less frequently, indole-positive proteus species).

Note: The increasing frequency of resistant organisms limits the usefulness of antibacterials, especially in chronic and recurrent urinary tract infections.

Contraindications: Hypersensitivity to trimethoprim or sulfonamides; pregnancy; nursing mothers.

Warnings: Deaths from hypersensitivity reactions, agranulocytosis, aplastic anemia and other blood dyscrasias have been associated with sulfonamides. Experience with trimethoprim is much more limited but occasional interference with hematopoiesis has been reported as well as an increased incidence of thrombopenia in elderly patients on diuretics, primarily thiazides. Sore throat, fever, pallor or jaundice may be early signs of serious blood disorders. Frequent CBC's are recommended; therapy should be discontinued if a significantly reduced count of any formed blood element is noted. Data are insufficient to recommend use in infants and children under 12.

Precautions: Use cautiously in patients with impaired renal or hepatic function, possible folate deficiency, allergy or bronchial asthma; and in those with glucose-6-phosphate dehydrogenase deficiency, where hemolysis may occur. During therapy, maintain adequate fluid intake and perform frequent urinalyses, with careful microscopic examination, and renal function tests, particularly where there is impaired renal function.

Adverse Reactions: All major reactions to sulfonamides and trimethoprim are included, even if not reported with Bactrim. *Blood dyscrasias:* Agranulocytosis, aplastic anemia, megaloblastic anemia, thrombopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia. *Allergic reactions:* Erythema multiforme, Stevens-Johnson syndrome, generalized skin eruptions, epidermal necrolysis, urticaria, serum sickness, pruritus,

exfoliative dermatitis, anaphylactoid reactions, peri-orbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis. *Gastrointestinal reactions:* Glossitis, stomatitis, nausea, emesis, abdominal pains, hepatitis, diarrhea and pancreatitis. *CNS reactions:* Headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo, insomnia, apathy, fatigue, muscle weakness and nervousness. *Miscellaneous reactions:* Drug fever, chills, toxic nephrosis with oliguria and anuria, periarthritis nodosa and L.E. phenomenon. Due to certain chemical similarities to some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia in patients; cross-sensitivity with these agents may exist. In rats, long-term therapy with sulfonamides has produced thyroid malignancies.

Dosage: Not recommended for children under 12.

Usual adult dosage: Two tablets b.i.d. for 10 to 14 days. For patients with renal impairment:

Creatinine Clearance (ml/min)	Recommended Dosage Regimen
Above 30	Usual standard regimen
15-30	2 tablets every 24 hours
Below 15	Use not recommended

Supplied: Tablets, each containing 80 mg trimethoprim and 400 mg sulfamethoxazole—bottles of 100 and 500; Tel-E-Dose[®] packages of 1000; Prescription Paks of 40, available singly and in trays of 10.



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Each tablet contains 80 mg trimethoprim
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Each tablet contains 80 mg trimethoprim and 400 mg sulfamethoxazole.

A high assurance of antibacterial activity
in cystitis, pyelonephritis and pyelitis diagnosed
as chronic and due to susceptible organisms.

Before prescribing, please consult complete product information,
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